Alternative Investment Analyst Review™

Alternative Investment Analyst Review

Guest Editor's Letter

The readings for the CAIA program, the basis for a comprehensive education in the growing sector of alternative investments, are evolving. Written under the direction of the CAIA Association, the second edition of the textbook, CAIA Level II: Advanced Core Topics in Alternative Investments, brings insights from practicing professionals and leading experts in the field of alternative investments. In this issue of AIAR, we have included a roundtable interview, where a number of the authors of this textbook discuss recent developments in, and the future of, the various sectors of alternative investments.

The second edition of the textbook has been thoroughly revised to bring the latest content and developments in the core areas of alternative investments, including private equity and venture capital, real estate and real assets, commodities, and hedge funds and managed futures. As the book was being revised, the authors and editors kept a keen focus on readability. The readings are designed to be easier to understand, for example each keyword is defined the first time it is mentioned to assist in students' mastery of the professional vocabulary and their corresponding concepts.

There have been substantial additions and revisions to the content of the real assets and commodities sections. In recent years, there has been a strong increase in the assets allocated to investments in areas such as farmland, timberland, infrastructure and intellectual property. CAIA has responded to this dynamic corner of the alternative investments industry by adding all-new content to the textbook to ensure that readers keep up-to-date with these rapidly growing asset classes. Within commodity markets, chapters have been added to focus on risk management, as well as the impact of interest rates, currency markets and business cycles on the supply and demand of commodities. Readers also learn about the unsmoothing of appraisal-based returns, which, in the context of real estate, explains how REITs and private real estate may have much more similar risk and return characteristics than when viewed through the lens of reported returns.

The material in the section discussing hedge funds and managed futures has also been revised and updated. A highlight of this content includes discussions on factor models and hedge fund replication. Rather than accepting that a hedge fund or managed futures fund has earned alpha when compared to a single-factor model, such as an equity market index, investors need to define risk more broadly. The use of alternative betas in a factor model, such as momentum, currencies or commodities, can yield a more accurate view of the risks taken, and value added by each fund manager. Risk management and due diligence are also emphasized in this section, including the risks of how prime brokers, custody arrangements, and futures commission merchants have impacted the industry since 2008. Whenever possible, examples from global markets are used, such as the extended discussion of currency markets in the context of global macro investing.

Finally, an all-new section on asset allocation and portfolio management has been added. This section introduces the important role of endowments, foundations, and pension funds as large and influential investors in alternative investments. Endowments and foundations have been large allocators to alternative investments, but these large allocations come with the need to manage liquidity risk, as well as understand the impact that the portfolio can have on the spending needs of the institution. Within pension plans, a shift from defined benefit to defined contribution and liability-driven investing schemes may have a substantial impact on the alternative investments industry.

All of these improvements ensure that readers of all backgrounds will receive the best and most up-to-date education in alternative investments. Designed to provide real-world relevance to alternative investment professionals, the second edition of the textbook, CAIA Level II: Advanced Core Topics in Alternative Investments, serves as a solid reference for those needing to keep pace with the rapidly changing world of alternative investments.

This issue of Alternative Investment Analyst Review provides additional insight into a number of areas covered by the Level II book. In the first article, Thomas Schneeweis provides an overview of a wide variety of issues in hedge fund research. Jurish, Brady and Williams also consider hedge fund investment, but from a unique perspective. The authors consider the benefits of hedge fund seeding vehicle investment and how it differs from direct hedge fund or fund of funds investment. The articles by Anson and Arkey both focus on real estate. Anson provides a lagged beta analysis of real estate diversification benefits and alpha, while Arkey provides an overview of developments in global real estate markets in 2011. In "Who Sank the Boat", Hilary Till discusses commodity futures and speculation and reviews the extant literature in the area. We wrap up this issue of AIAR with a roundtable on alternative investments with a number of authors of the second edition of the Level II book.

We hope you enjoy this issue of AIAR and look forward to your comments and submissions.

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concerned, though, that proposals to restrict "speculation" may actually be placeboes that distract from addressing the real causes of these price spikes. One hopes that advisers to influential policymakers will do careful research on the economic theory and practice of commodity futures markets. They would then understand why a large body of academics and practitioners desire to protect these vital institutions.

CAIA Member Contribution

ABSTRACT: Real Estate is generally considered one of the least liquid asset classes. There are several reasons for the lack of liquidity: the unique nature of each property, the lack of a publicly traded market, the appraisal nature of valuing assets, and the large "chunky" size of each asset. While real estate is a valuable asset class with a favorable risk-and-return profile, the value of real estate as either an alpha generator or a portfolio diversifier is potentially overstated. It is the illiquid nature of real estate that makes comparisons to contemporaneous financial market movements inappropriate.

Using a lagged beta analysis, the author finds that the overall beta of real estate to the public equity markets is much larger than previously thought – in fact it is many times greater than a single period beta. In addition to an increase in the beta, the author observes a decline in alpha or the excess returns derived from real estate. The decline in alpha was most noticeable when considering the behavioral aspect of lagged real estate betas; there was no measurable skill attributable to real estate managers in Up Markets, while there was large economically and statistically alpha in Down Markets.

Finally, using a multi-period correlation coefficient, the paper finds that real estate is not as large a portfolio diversifier as previously thought. This is perhaps the largest contribution of this paper as real estate has long been thought to be an ideal diversifying asset class from stocks and bonds. There is still value with real estate based on its own risk-and-return characteristics, but only about one half as much diversifying potential when a multi-period analysis is used.

Investment Strategies

ABSTRACT: For the past 10 years, interest in hedge funds has been increasing dramatically, as demonstrated by a continual stream of hedge fund launches and substantial asset growth. Institutional investors have steadily increased their hedge fund allocations to capitalize on the attractive risk, return, and non-correlation benefits compared to traditional investments. Over time, many investors have also recognized that a subset of the hedge fund industry – hedge fund seeding – offers an exceptional opportunity to benefit not just from attractive investment returns, but from the hedge fund industry's growth as well.

Despite significant contraction in the second half of 2008, most experts predict the hedge fund industry will resume its growth and that hedge funds will continue to play a vital role in the institutional investment landscape (Quirk, 2009). Institutional investors can access hedge fund investment benefits through multiple strategies including direct investments, funds of funds and hedge fund seeding vehicles. This paper focuses on the potential benefits and process of providing seed capital to start-up hedge funds through a hedge fund seeding vehicle. The authors present the potential risks and the rewards of seeding, compare commonly used seeding models, and explain why the current environment is attractive for seeding.

Global Markets Overview

ABSTRACT: The IPD Global Cities Report summarizes the key analytical findings from IPD's database of over 60,000 real estate investments worldwide. In this annual analysis of 60 cities, the authors discover wide performance variations across cities in Asia Pacific, North America, and Europe, and indeed across the various property types within these markets. The strongest and weakest markets are identified in both recent and long-term time horizons, and diversification benefits highlighted for multi-national real estate investors. In addition, there were opportunities for positive returns to be found by investors throughout the economic downturn due to the unique drivers of performance in each market.

Alternative Investments Roundtable

ABSTRACT: The CAIA Association is pleased to announce the second edition of its main textbook for the Level II exams: Advanced Core Topics in Alternative Investments. The book will be published in September 2012, and will be a required core reading for the CAIA Level II exam for March 2013 and beyond the Level II exam. Given that markets for alternative investment are continuously changing, CAIA regularly revises its curriculum material. The new Level II book was edited by Keith Black, Donald R. Chambers, and Hossein Kazemi, with contributions from a number of leading practitioners, including Mark Anson, Jim Liew, Francois-Serge Lhabitant, David McCarthy, Galen Burghardt, Thomas Meyer and Pierre-Yves Mathonet. The interviews presented below reflects the ever-changing nature of alternative investments and highlights the themes most important within each sector.

Call For Papers

Articles should be approximately 15 pages in length (single spaced) and on a topic of general interest to the CAIA community.

Please **download the submission form** *and include it with your article in an email to* **AIAR@CAIA.org**.

Where Academics/Practitioners Get It Wrong

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Introduction

While it is impossible in a short synopsis to convey all the pros and cons of hedge fund research, the purpose of this open letter is to once again tilt at the "hedge fund research" windmill. Why now? I recently responded (Schneeweis and Kazemi, 2012) to a book (Lack, 2012) which promoted the belief that hedge funds provided no real benefit to the average investor over the past decade. I was surprised to read many of the misconceptions held by the author, as well as the misconceptions about hedge funds presented in many of the articles cited by the author. In this article, I hope to remind individuals of some of the basic problems and misconceptions in hedge fund research. After over twenty years of direct academic hedge fund research, as well as over thirty years of direct investment experience, including ten years as a partner in a firm which ran a series of independent commodity, hedge fund and managed futures funds, I remain astounded as to the assumptions that practitioners and academics make when conducting research in the hedge fund area. For example, every three or four years, an article or book appears which attempts to paint the industry with a broad brush of poor performance, and suggests that the rise in AUM in the industry could therefore only be accomplished by managers overstating the benefits of their underlying strategies. Given the sophistication of the investment industry, even in an imperfect information market, the very fact that over the past twenty years AUM in the industry has reportedly grown from under $100 billion to over $2 trillion is indicative that many investors view the strategies which underlie the hedge fund umbrella as beneficial in their expected return/risk investment management decisions.

This open letter is addressed to new researchers, as well as to those already committed to a research direction. I appreciate that "success" in both practitioner and academic research is based on AUM (Assets under Management or Articles under Management). How one achieves that goal is rarely criticized. For academics, if a reviewer passes it then it must be correct (note this article is not a damnation of the academic review process as the founding editor of the *Journal of Alternative Investments* I rely on the kindness of the reviewers). I am constantly amazed as to what academics or practitioners believe to be the facts underlying the hedge fund industry. For years, a major part of the annual research conference sponsored by CISDM was a seminar on "Where Academics Got It Wrong" (including my own research errors). This paper only summarizes a few of the areas discussed during those CISDM presentations. There are many areas not covered in this note. I look forward to other academics and practitioners sending me their own findings. At the very least, I hope the concerns addressed herein will open up new research that may offer new insights.

2. General Issues in Hedge Fund Research

The purpose of this section is to summarize several of the major points addressed at a

series of seminars and conferences offered by the research center (CISDM) I have headed over the past fifteen years. Not everyone will agree with the questions or the content, however, the issues are real and the responses offered in many cases provided an alternative look at research conducted on the hedge fund industry. We all should be reminded that:

2.1 Simple Cross-sectional Tests Are A Sample of One: Results based on a single historical time period represent a sample of one and should not be used as a simple case for or against investment in any asset class or investment strategy. In the end, every portfolio results from a set of decisions (discretionary or systematic (algorithmic)) with the caveat that even the discretionary processes often have a systematic element to them. The resulting portfolio is a collection of assets and that collection of assets will make money in some market conditions and lose money in others. I have never invested in a manager who could not tell me the simple basis for the construction of his current portfolio (and if that construction process differed from the past), and in what market conditions his current portfolio would lose money even if it never lost it in the past. In regard to past data, what was important (especially for funds for which I did not have daily positions) was that the fund lost money when it should and made money when it should. It amazes me the degree to which academic research promotes the idea that hedge fund managers have daily or even monthly flexibility to dramatically change their portfolio as if they were active discretionary traders. One should be aware of the inconsistency between assuming active discretionary hedge fund managers and then proceeding to use various statistical tests that are based on a consistency of hedge fund style and judgment. At the very least, readers would be helped by research which includes a series of footnotes or a section at the end of each article which emphasizes the potential data or methodological shortcomings in the presentation.

2.2 Representativeness of Historical Data: One of the primary problems in academic and practitioner research is that they are primarily historical presentations that often tell us little as to current hedge fund activities or current problems in hedge fund management. For example, articles published in 2011 were often written in 2008, based on data ending in 2006. In short, academic research is often five years or more out of date when it is published. I appreciate the value of testing hypotheses on historical data, however, one should be careful not to cherry pick the time period of analysis (at least acknowledge the potential biases in the use of that period of analysis) or to cherry pick past research without at least a footnote that the cited articles, while instructive at the time of publication, have become a little dated over time. For example, in an article forthcoming in a major financial journal, the author(s) states "Indeed, more recent studies provide a more skeptical view of hedge fund returns, finding smaller and only sporadic alpha (e.g., Fung et. al., 2008; Naik et. al, 2007) or no outperformance at all (e.g., Amin and Kat, 2003; Aragon, 2007; Griffin and Xu, 2009)." These "recent" results are almost 9 years out of date with outdated definitions of alpha (excess return on a set of non-investible factors is not alpha) or outdated methodology (e.g., simple cross-sectional tests). I often see references to old articles of mine that were fine for their time, but now are of little direct relevance to today's markets. I do not know how to get the litany of past articles (except those directly related to the current issue and only those for which the current research hopes to refine) out of the process. I am guilty of it myself, but constant referral to past research which have a host of data and empirical issues does a disservice to the common reader who may be lead to believe that if it is cited it must be correct.

2.3 Hedge Fund Index-based Performance: Considerable research is based on the use of hedge fund "index" data as indicative of fundamental hedge fund and market relationships. Composite hedge fund indices may offer little as to the actual or expected performance of an individual hedge fund. Moreover, research based on historical hedge fund indices may tell us little as to current hedge fund strategy relationships with market factors. The hedge fund industry has evolved dramatically over the past twenty years. While discussed in greater detail later in this presentation, focusing on the returns of a composite index for which the underlying strategies, and investment in those strategies, have changed dramatically, offers little evidence as to the underlying benefits of the universe of hedge funds over time except under the most restrictive of assumptions as to investor behavior and investment. Remember, the Composite Index returns of the 1990s reflect the returns primarily of CTAs and Global Macro. Asset Weighted (AW) Composite Index returns for the last ten years reflect that strategy with the greatest AUM under management (e.g., Equity Long Short) while Equal Weighted (EW) hedge fund indices reflect that strategy with the greatest number of funds or the strategy with the highest historical volatility. In brief, one should not use historical composite returns to provide an estimate of the current benefit of hedge funds as illustrated in today's Composite Index.

2.4 Impact of Index Choice: As a corollary to 2.3, note that hedge fund indices reflect the performance of a specific "non-investible portfolio of hedge fund strategies" and depending on the index chosen results may differ dramatically (the same may be true for the hedge fund database chosen). An equal weighted index assumes that the investor holds a hedge fund portfolio which reflects the number of reporting funds and that the investor can rebalance consistently with the indices reporting interval (e.g., monthly). An asset weighted index assumes that the investor holds a hedge fund portfolio weighted to reflect the AUM of the underlying managers and can adjust his/her portfolio to match incoming cash flows to each strategy. There is no single investor that meets the above. What composite hedge fund indices do provide is an estimate of a "composite return" to a wide range of strategies within the hedge fund industry at a particular point in time. In the future, research should emphasize that individual funds will reflect the returns of the composite index only to the extent that the fund of funds or the manager's strategy reflects the composition of the historically derived hedge fund composite index.

2.5 Impact of Database Choice: As a corollary to 2.4, remember hedge fund research based on a hedge fund database may not reflect results of another hedge fund database unless the two databases reflect the performance of a similar set of individual hedge funds and hedge fund strategies. In the real world of hedge fund management, I never relied on a single hedge fund database. We often purchased several databases and screened them for duplicates, etc. As indicated in some recent research, several of the current existing databases (HFR, CISDM) were created in the early 1990s, while another database (CSFB/Tremont) was enlarged dramatically in the early 2000s. Consequently, for the pre-2000s period, the results often differ between research on the older databases (HFR and CISDM) and those (CSFB) with a relatively unique set of managers (Schneeweis, Kazemi, and Szado, 2012a).

2.6 Strategy Based Indices: Individual strategy based indices more closely reflect the actual performance of a particular focused fund of funds or hedge fund and may provide a more realistic portrayal of expected rates of return and risks across an array of market environments. However, even in this case, individual strategy indices are a mix of individual strategies (e.g., onshore versus offshore, value versus growth-based ELS, long-term trend-following CTAs and short-term-trend following CTAs). In short, most hedge fund indices do not reflect, or even worse are contaminated by widely ranging individual hedge fund performance at the sub-strategy level. In the future, indices and sub-indices need to be created which provide a clearer focus on a particular asset selection process.

2.7 Strategy Classifications: Researchers must be careful not to assume that the strategy classification given

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in any individual database actually reflects the underlying trading process. I could offer numerous examples of CTA strategies listed under Global Macro, of equity collar strategies listed as market neutral, and a range of strategy-specific funds of funds grouped under a risk classification rather than a strategy classification. What is necessary to understand are the conditional factors driving individual hedge fund strategies and to ensure that particular hedge fund strategy returns are consistent with the historical factors (e.g., ELS managers generally make money in up equity markets and Distressed Security hedge fund managers perform well in declining credit spread conditions). Researchers should note that considerable academic research conducted in the mid-2000s was centered on hedge fund "market timers". We now know that many of these "market timers" never market timed in terms of trading in and out of U.S. equities to cash but primarily made their money by trading against close of day pricing in the U.S. As a sidebar, it always amazes me when academics refer to all hedge fund managers as market timers. Few hedge fund managers directly time the market. They may increase shorts based on firm valuation, or they may sector rotate if they have models which focus on sector valuation, but few of the major strategies are in and out of their underlying market on a consistent basis. The cost of trading is just too large.

2.8 The Average Investor: As important, one should not look solely at returns of the entire industry as reflecting the pros and cons of the entire industry or that of an average investor. A wide range of individuals/institutions hold a wide range of hedge fund strategies for a wide range of reasons (regulatory constraints, industry standards etc.). Given the varying risk exposures of any individual investor, the benefits of hedge funds in general or a strategy in particular are investor specific. Hedge funds are often held as part of an investor's larger portfolio most of which is illiquid (job, home equity, etc.). The generic approach of risk adjustment (e.g., information ratios) may tell us little as to whether a particular hedge fund or strategy adds value after consideration for proper total portfolio risk. As in most research, general statements are generally wrong. Often simple statements as to what analysis was conducted on what data, and what are the results, are all that can be said. Research is as much about what is said as what it leaves out or simply cannot be analyzed given the time period, data or current methodologies. For example, looking over a past period of superior bond returns (falling bond yields) or stock returns (falling volatility) may tell us nothing about how a particular hedge fund strategy may impact a portfolio of stocks and bonds in a forecasted period of increasing interest rates or rising volatility.

2.9 Hedge Fund Fees: In measuring the impact of fees on investor performance, one must be careful to ensure that one is measuring the investor's net return or net profit versus net profit for an individual hedge fund manager. The difference between gross return and net return is of course the return to the investment manager. However, "real" hedge fund manager return is not gross profit. The gross profit (e.g., based on reported hedge fund performance fees (e.g., 1% and 20%) is similar to a corporate firm's total revenue. From those revenues the fund manager must pay a range of management and operational costs. While difficult to estimate for most managers, net manager profit is only a percentage of gross industry profit (however poorly measured). In short, when comparing investor net profit (returns on investment) with hedge fund manager profit, one must compare net investor profit with net hedge fund manager profit and not net investor profit with gross hedge fund manager profit.

One could go on and on, but let me make it clear that I do not regard as a requirement of investing in hedge funds empirical results that indicate that all hedge fund managers or hedge fund strategies must provide evidence of positive "excess return" across all market environments. We simply do not have, at this time, the data or the methodology available to determine the final "true risk-adjusted" benefits to any investment strategy. For the most part, hedge funds, with some managers and strategies better than others, offer the ability to provide unique expected return and risk characteristics not easily available in many other investments, especially in certain

market conditions. One cannot and should not ask for more. For a further discussion of myths and questions involved in hedge funds and managed futures research, readers are directed to a range of issues discussed in the now dated "Myths of Managed Futures" (Schneeweis, 1998a, 2010a) and "Myths of Hedge Fund Investment" (Schneeweis,1998b, 2010b) to the more recent additions presented in "Questions in Hedge Fund Investment" on the INGARM Website. (www. ingarm.org). See the Appendix for a list of current questions.

3. Individual Issues in Hedge Fund Research

Let us return to the reasons for starting this letter (recent research in hedge fund research that is starting to become accepted wisdom when in fact it is far from that). Among my associates we discuss these issues daily. Through time one cannot be consistent without being a hypocrite, unless one learns very little over time (or things never change). I do believe that there are numerous misrepresentations of the hedge fund industry both by its proponents as well as its critics. The industry is an evolving process and explaining its current role in the investment industry should be everyone's goal. I have a bias against any research which focuses on past data which does not reflect the current conditions. For example, we now live in an age where a range of commodities are traded globally and are available 12 months a year yet I see commodity research discussing the seasonal nature in certain commodities based on data from a period in which commodity production was localized and for which the results have no relevance to today's market conditions. In short, we often refer to the past while not emphasizing how it has changed. In a switch on the comment of George Santayana - one should remember that those who only live in the past are plagued to repeat it (or miss the benefits of acting on known changes in current conditions).

3.1 Use of Qualitative Data in Hedge Fund Research

If one is to address one set of issues in hedge fund research perhaps the easiest place to start is simply with issues related to the quality of the data often used by researchers. Each of the primary databases used by hedge fund researchers has its own history. The CISDM database is perhaps the oldest with its origination as the MAR database in the early 1990s. In the mid 1990s the HFR and Barclay databases were started, and by 2000, CSFB had ramped up its hedge fund business. Note, most of the funds included in the CSFB database in 2000 already reported to the other databases and research which removes many of these funds as backfill results in a set of funds which misrepresent the industry during that period. In the early part of 2000, I became directly involved with the development of a major hedge fund platform. One of our first projects was purchasing and combining all the major databases of the time (HFR, CISDM, Barclay, CSFB, Altvest, Cogent). We even hired an auditing firm to check the quality of some of the data in some of these databases. They soon came back that, even for their limited sample, the qualitative data could often not be verified (concerns existed even on the return data). What we learned at that time and over the years is that no hedge funds data collection firm has the time or the resources to insure the exactness of the data. A few examples may provide some clarity:

3.1.1 AUM-Based Data: It is well known that industry AUM data provided by most major index providers is merely a back of the envelope estimate (we have no real idea of the total amount managed in the industry). It is less known that the monthly AUM data in hedge fund databases has numerous problems that make any research (e.g., fund flows reaction to historical returns, IRR measurement) problematic. For instance, a review of the CISDM and CSFB databases showed that in any one month for the period 2008-2010 between 10 and 20% of the funds reported the same AUM in any two consecutive months. Imagine research in which up to 20% of the data in any one month is faulty, but we continue to conduct research using fund AUM as if all is OK.

3.1.2 Other Qualitative Assumptions: Almost all other qualitative data has similar defects. For example, in almost

any database (year 2010) that I checked, only 80% of the funds who report AUM in dollars report that they have a listed auditor. Does any researcher really believe that 20% of dollar-denominated hedge funds do not have an auditor? Of course not – but research crosses my desk from researchers who consider funds who do not report an auditor as assumed not to have one. Their response – it is not my responsibility to check the data; maybe not to check, but to put a "BIG" qualifier in the first footnote as to possible biases in one's results as a result of the problems in the qualitative data.

3.1.3 "Continuity Bias": Whatever the defects in qualitative data, the biggest is the "Continuity Bias"; that is, we use a current database with current listed qualitative data. If one does not have a yearly record of the database used almost all researchers assume that the qualitative data reported in the most recent database was the same in all previous years (e.g.,performance fees, leverage, redemption restrictions). A brief analysis of databases in 2002 and 2010 for a common set of funds indicate a number of changes; however, I have no idea if the number of changes reflects either too little or too many. What I do know is that the qualitative data of 2010 may not have any relationship to the qualitative data of 2002 and certainly earlier. To make that assumption can drastically impact empirical results.

3.2 Return-Based Data Analysis

3.2.1 Database Bias and Time Period of Analysis: Given the problems in qualitative based research, it is not surprising that most researchers concentrate on return-based research. Unfortunately, each database has different reporting funds and classifies those funds differently. A classic example is the inclusion of Madoff feeder funds in the CSFB database, but not in the CISDM database. In 2008, the CSFB market neutral index reported a 40% drop in value (Schneeweis and Szado, 2010). As a result, research that concentrated on the CSFB/Tremont database market neutral index has differential results than that conducted on any other database. Recent research (Schneeweis, Kazemi and Szado, 2012a) has also shown differences in relative performance, prior to 2000 and post-2000, depending on the database used (Schneeweis, Kazemi, and Sazdo, 2011, Aggarwal et. al., 2012). In short, existing research results may be database- and time-period specific. Researchers beware.

3.2.2 Return Interval Use: Another concern with the current research is that it is predominately based on monthly data. A host of research questions are simply not conducive to the use of monthly data (including tests of first order autocorrelation and fund return persistency) which really requires a higher frequency of return data. For example, in some of my own recent research (What a Difference a Day, Week, Month Makes, (Schneeweis, Kazemi, and Szado, 2012b)) I have shown that statistical patterns that exist in monthly data are not seen in daily data (the existence of first order autocorrelation often is shown to exist in monthly data, but not in daily data over the same time period), or are susceptible to a single data point or set of data points. Removal of several months in1998 (August, September and October) or in 2008 (October, November, December) have significant impacts on reported descriptive statistics. Researchers should be cautious using monthly data to examine issues that may only be correctly analyzed using higher frequency data. Researchers should at least acknowledge that the choice of the measurement period used has significant influence on the estimated relationship between the dependent variable and the explanatory independent variables.

3.2.3 Independent Return Factors (What Set of Factors To Use in Return Estimation): The factors academics and practitioners use are often simply determined by past research. As discussed later, we commonly use the same set of factors to attempt to describe the historical return pattern across a wide range of differing strategies when in fact each strategy probably requires a different set of variables. Today in hedge fund research, academics often use a combination of Fama and French (FF), Fung and Hsieh (FH), and momentum factors. The rationale is straightforward, the FF factors are used for market risk relationships, the FH for hedge fund timing, and the momentum factors for trading and market processes. The thought that these factors would fit all hedge fund strategies is problematic. Why use equity momentum factors in a credit-spread strategy? Why use timing variables at all for hedge funds, which for the most part track a particular set of investments and given the lack of liquidity in those assets rarely conduct timing strategies (note for CTAs and some Global Macro – timing and momentum factors may work – but as shown in Schneeweis, Kazemi, and Szado, 2012a (forthcoming, *Journal of Alternative Investments* 2012) FH factors are rarely significant and if one wishes to capture short-term, mid-term, and long-term timing, various CTA trading models work as well as the FH variables and are more consistent over a range of market conditions in explaining the return of a host of active hedge fund/CTA strategies). In short, we use what we can (e.g., what is available), not what we should. After twenty years of Fama and French (FF) (1992) and fifteen years of Fung and Hsieh (FH) (1997) and Schneeweis and Spurgin (SS) (1996, 1998c) (Schneeweis and Spurgin used absolute value and CTA-based trading factors), perhaps it is time to move to a more complex set of variables that actually represent the underlying strategy. I simply do not understand why I see articles which include variables such as gold, currency indices, emerging market indices as explanatory or risk factors for strategies which hold no gold, no currency or emerging market debt or for which the underlying risk holdings have nothing to do with any of the aforementioned variables. As important, since none of the factors used are in trading form (include trading costs, etc.) - as discussed later - the results are not indicative of alpha, only model dependent excess return. At least that acknowledgement would help some of us from getting heartburn when we read the description of the results.

3.3 How do Hedge Funds Act?

Whatever the defects in qualitative and quantitative data, perhaps the biggest problem is in the simple inaccuracies in understanding how hedge fund strategies act. I remember an article from a top journal in which the author(s) conducted a study of the determinants of Japanese Convertible Bond Arbitrage and for which a major finding was that a credit spread variable existed for U.S. Convertible Bond Arbitrage, but not for Japanese. How is this research? In Japan at that time, the chance of a corporate bond default was nil. No Japanese bond responded to traditional credit spread variables. Other examples exist. I recently saw a study that used emerging market indices to capture the returns of a set of global macro funds without considering that today (depending on the database) many global macro funds are CTA's in HF clothing. In another case, a researcher regressed CTAs on a set of common market factors and found that the betas of the common market factors did not change over time concluding that CTAs were not active traders. I can think of no one who believes that CTAs are not active traders. The lack of change in the betas of the market factors was a result of the fact that the R square of the regression was so poor and the market factors so irrelevant that no significant changes occurred. As a contrast he ran an ELS on the same factors and saw many changes in beta coefficients and reported an ELS manager as extremely active when in fact the ELS manager never changed holdings. It was the market factors that changed (e.g., the S&P 500 went from an energy-biased index to a technology index). As stated earlier, before one writes about a strategy, the person should talk to people who trade that strategy. As an editor, it would dramatically reduce the need to tell an author that he simply has it wrong about how he describes how something is done or that simple reference to other articles, (who may have also got it wrong), is sufficient to the day.

An example of academics misunderstanding the hedge fund industry is the number of researchers who quote the uniqueness of hedge fund managers as having complete discretion over whether to accept new capital

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from clients and having control over the optimal timing of money into and out of their strategies. In short, many authors present hedge fund managers as market timers with the flexibility to fundamentally change their asset holdings and risk characteristics within relatively short time frames. (Some research in the early 2000s did indicate that hedge funds listed as market timers made excess return; the reason they made money is not that they were market timers, but that they were part of the great mutual fund foreign/U.S. pricing scam and in fact only listed themselves as market timers.)

The problem reminds me of Charles Dickens's "Oliver Twist" in which a judge criticizes a man for the illegal actions taken by his wife. The man replies to the judge, "the Law may be well and good, but it does not know my wife." Many researchers may well know the details of hedge fund definitions, but not know how they are actually managed. Hedge fund managers, as it is known, have many restrictions on money coming in and out which depend on a range of market considerations (note: offshore differs from onshore and often has different investor liquidity rules than in the U.S.). I smile when I read academic researchers discussing hedge fund managers generically as market timers when many managers follow valuation-based trading strategies and are anything but market timers except in a very limited sense (lowering market exposure in very limited set of circumstances). Similarly, I remain amazed at the extent of research indicating that changes in real AUM are due to investors chasing returns. While past return is of significance, we have a limited set of economic cycles and strategy development to provide a definitive basis for what drives investment into individual strategies or managers. Given the restrictions on fund investment as well as the inability to market hedge funds publicly in the U.S. (note the restrictions differ outside the U.S and the ability for hedge funds to publicly market within the U.S. may change in the future), it is important to note the importance of prime brokers and institutional capital introduction groups in the AUM raising process. I have always looked at many of the AUM raising and return studies with an "Oliver Twist" smile.

In six years as a research manager in what grew to be an almost $4 billion managed account hedge fund platform with 50 hedge funds, I really was an individual who managed lines of credit. What I did not manage were cash flows based primarily on recent performance. If I fired a hedge fund manager, they would rarely come back unless I had a lot of money. If I had a sales agent I had given an AUM level came with clients I had to say yes to or lose him as a sales agent. Whatever the case, I and the managers under me did not have the ability to quickly change the asset level or mix of the portfolio based primarily on past return. I was a manager of credit lines so I could pay out to an investor without changing the actual funds allocated to various managers. As a sidebar, managers were also not allowed to dramatically change strategy direction or risk exposure for the simple reason that they were held in a portfolio based on their expected risk characteristics. Except in a few strategies, most hedge fund managers have limited ability to dramatically and quickly change strategies or holdings.

3.4 Hedge Fund Pricing

Of course, one of the reasons I could handle lines of credit was that most of the managers had positions at various acceptable prime brokers. Since I dealt primarily with managed accounts I was able to limit the existence of side pockets. Except for side pockets, I am tired of hearing how managers self-manage the pricing of their portfolios. As a side bar, an academic/practitioner who thankfully took the time to read this piece pointed out to me that in his personal experience, funds were required to have their portfolios evaluated through third-party pricing agencies quarterly. Researchers should be aware that some inter-month valuation issues may exist on some very illiquid bonds for which self-pricing would be permitted for a few days, but any reasonable asset manager requires the portfolio to be priced externally and even fair valued depending on the external client. I know the pricing

issue makes great theater, but for most equity-based hedge fund strategies it is bad fact.

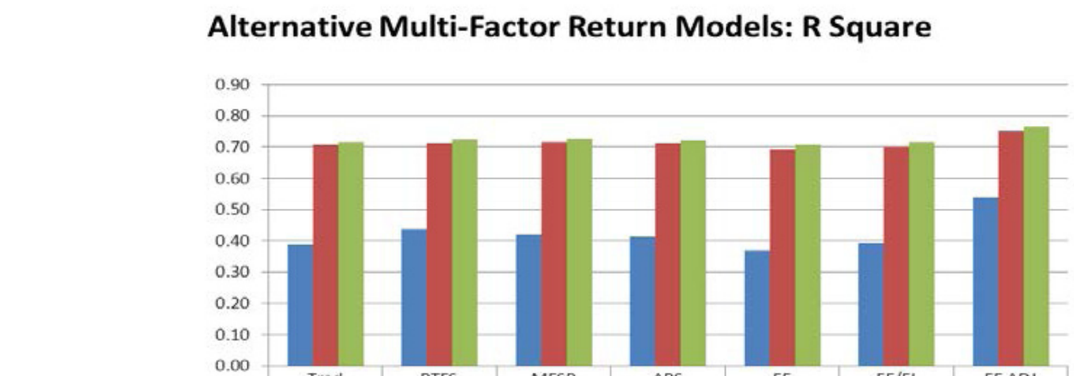
3.5 Hedge Fund Factors: Hedge Funds as Absolute Return Vehicles

Hedge funds are sometimes described as absolute return strategies which are not correlated with traditional stock and bond markets. However, while some individuals may still present hedge funds using this "outdated concept" of absolute return, today the accepted knowledge as to the return process of hedge funds is more evolved. While the sources of hedge fund returns are often described as being based on the unique skill or strategy of the trader, for the past 15 years academic research (Fung and Hsieh, 1997), (Schneeweis and Spurgin, 1998, Schneeweis, Kazemi, and Martin, 2003, Schneeweis, Kazemi, and Szado, 2012) has demonstrated that hedge fund strategy returns are also driven systematically by market factors, such as changes in credit spreads or market volatility that are directly related to the longer term fundamental security holdings of the hedge fund rather than exclusively by an individual manager's alpha. Therefore, one can think of hedge fund returns as a combination of manager skill and an underlying return to the hedge fund strategy or investment style itself. In fact, similar to the equity and bond markets, passive security-based indices have been created that are designed to capture the underlying return to the hedge fund strategy (Schneeweis, Kazemi, and Karavas, 2003, Crowder, Kazemi and Schneeweis, 2011). The performance of an individual manager can be measured relative to that "strategy" return. If a manager's performance is measured relative to the passive security-based hedge fund index/benchmark, then the differential return may be viewed as the manager's "alpha" (return in excess of a similar non-manager-based investable replicate portfolio). If a manager's performance is measured relative to an index of other active managers, then the manager's relative performance simply measures the over- or under-performance to that index of manager returns.

Other issues in return estimation include the use of equal weighted or asset weighted portfolios. The negative of equal weighted is that it weights small and large funds equally. Small and large funds often act differently. Small funds may outperform in a database due to backfill bias, etc., however, most research has not concluded (and cannot) if small always outperforms large or large outperform small. It is strategy dependent and time dependent (is it a large fund that got small, small that got large, or small that "decided to stay small. Is it a small fund in a large fund family or a single fund in a single fund family? Is it a single fund in a large "managed account" family in which the fund is only used for "public relations" purposes)? What is true is that at some level most hedge funds in a strategy have to trade similar positions due to liquidity restrictions in the assets traded. At that level, the differential return is less size impacted (but note again this is strategy dependent). As a sidebar, the largest hedge fund managers often fail to report to most hedge fund databases. In short, how we measure and what we measure often disguises fundamental issues of performance (even using return to risk as a comparison in a world in which risk is a more multivariate issue may be of concern) – note small firms (by AUM) are only a step away from failure with smaller research teams and smaller compliance teams and dealing with small brokers such that, as an investor, small (at some level) must outperform to cover its organizational risks.

One would not normally raise the issue of return estimation. Each form of return estimation has its uses and each use is determined by a range of issues (e.g., distribution time frame). Whatever the case, differences in return form does impact what we report. As shown in Exhibit 2, average differs from geometric (we know that the mathematical relationship is affected by the volatility of the data used). Moreover, as shown in Exhibit 2 average and annualized (geometric) differs from IRR. IRR requires assumptions as to cash flows into/out of the index/fund and is sensitive to a host of issues as discussed in section 3.6.

Exhibit 1: R Square: Alternative Multi-Factor Return Models



	Trad	PTFS	MFSB	ABS	FF	FF/FI	FF ADJ
CSFB/Tremont HF Index	0.39	0.44	0.42	0.41	0.37	0.39	0.54
CISDM EW Hedge Fund Index	0.71	0.71	0.72	0.71	0.69	0.70	0.75
HFRI FW Composite Index	0.72	0.72	0.73	0.72	0.71	0.71	0.77

Period of Performance: 1998-6/2009
Model 1 (Trad): Traditional Four Factor Model (S&P 500, Russell 2000, BarCap U.S. Government and Corporate High Yield).
Model 2 (PTFS): Traditional Four Factor Model (S&P 500, Russell 2000, BarCap U.S. Government and Corporate High Yield) plus Fung and Hsieh four dynamic trading factors (Equity, Fixed Income, Currency and Commodities).
Model 3 (MFSB): Traditional Four Factor Model (S&P 500, Russell 2000, BarCap U.S. Government and Corporate High Yield) plus four momentum factors (Equity, Fixed Income, Currency and Commodities) based on the Schneeweis and Spurgin (1998) and Spurgin (1999) futures based momentum factors.
Model 4 (ABS): Traditional Four Factor Model (S&P 500, Russell 2000, BarCap U.S. Government and Corporate High Yield) plus Schneeweis and Spurgin (1998) four absolute value factors (Equity, Fixed Income, Currency and Commodities).
Model 5 (FF): Traditional Three Factor Fama-French Equity Factors (Market Factor Excess Return, SMB, HML)
Model 6 (FF/FI): Traditional Three Factor Fama-French Equity Factors (Market Factor Excess Return, SMB, HML) plus Fixed Income Factors (BarCap U.S. Government and Corporate High Yield)
Model 7 (FF ADJ): Traditional Three Factor Fama-French Equity Factors (Market Factor Excess Return, SMB, HML) plus Fixed Income Factors (BarCap U.S. Government and Corporate High Yield) plus Equity Momentum Factor (French, 2010).

In short, today one does not refer to hedge fund returns being compared to a simple equity or bond index or the risk-free rate. We have moved on and considered additional risk or return factors. Even in this area we have been less than perfectly honest. We continue to use four, five, six, and seven multi-factor return models simply because someone else used them. The traditional four-factor, FF, FH, and SS augmented models simply do not offer significant differences. In fact, the data we use may swamp anything we do with the modeling (which in fact should contain a conditional factoring approach to have any real significance over time).

3.6 Hedge Fund Return: Digging into the Numbers

One would think that academic studies would at least use a common measure of return estimation. However, there are various reasons for using different measures of return (e.g., geometric, average). Recently, IRR has been suggested as an additional return measure (and when used, results in a lower benefit of hedge funds). Each measure has its pros and cons. For example, IRR may be testable if one had a database that actually captured

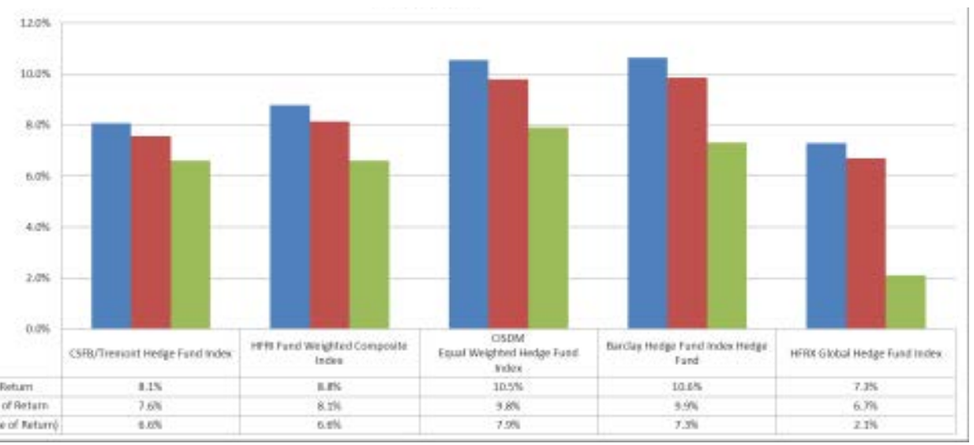
all hedge funds and for which reported AUM reflects true AUM, and if one would concentrate on relatively small periods of investment for which the number of investors remained constant and were commonly exposed to a set of strategies. As noted earlier the AUM estimated at the industry or strategy levels are just that – estimates. Even the AUM reported in most databases have a number of issues (an analysis of two of the largest databases (CSFB/Tremont and CISDM/Morningstar) indicates that in any one month between 10% and 20% of firms report the same AUM in consecutive months). In short, current hedge fund data and especially AUM data is so flawed that it simply prevents any individual from using that data to estimate AUM industry effects for any one month, year or decade.

We have not mentioned this before, so why not here. Most practitioner and academic studies report results over some cross-sectional time frame. Moreover, if one is concerned with the ability of hedge funds to provide benefits to the average investor and if you believe that results which do not consider AUM differences by year are misleading, why not simply provide results on a year-by-year basis. Rather than assuming some contrived investment process, a more direct method is simply to look at each year with dramatic AUM differences. The results in Exhibits 3a and 3b show the impact of the addition of a 20% investment in a range of hedge fund indices on information ratios of an equal-weighted stock and bond portfolio (S&P 500, Russell 2000, and Barclays Government and High Yield Bond indices). Again, the results show that for the past 13 years the inclusion of a hedge fund index (AUM based or EW based) provided return and risk benefits to an "average investor" in almost every year of analysis using the most basic of return/risk comparisons (information ratio). Note, several years were not included in which the portfolio return was negative and in which information ratio comparison may not be relevant (a more negative information ratio may in fact have a lower negative return and a lower standard deviation). In any event, the actual benefits of any analysis are often based on the data used in analysis. In Exhibit 4, for example, we show that the HFRX Global Hedge Fund Index outperforms most other indices in the late 1990s (periods of low HF industry AUM), but underperformed many other hedge fund indices post-mid-2000 (periods of high HF industry AUM). This return pattern may explain in part the different IRR analyses' results using the HFRX Global Hedge Fund Index in contrast to other traditional hedge fund indices.

3.7 Indices as Representative of Investor Return

Many researchers continue to use indices to capture return characteristics. As shown previously in Exhibits 3a and 3b, the hedge fund index used may have implications on results. Researchers often mention that poorly

Exhibit 2: Hedge Fund – Comparison Rates of Return



	CSFB/Tremont Hedge Fund Index	HFRI Fund Weighted Composite Index	CISDM Equal Weighted Hedge Fund Index	Barclay Hedge Fund Index Hedge Fund	HFRX Global Hedge Fund Index
Average Annual Return	8.1%	8.8%	10.5%	10.6%	7.3%
Annualized Rate of Return	7.6%	8.1%	9.8%	9.9%	6.7%
IRR (Internal Rate of Return)	6.6%	6.8%	7.9%	7.3%	2.1%

performing managers may not report and thus any index may overestimate returns (of course, over-performing managers that are closed may also not report so the final results are unknown). For example, there is plenty of academic research on the problems in the use of new hedge fund indices due to their use of backfill bias, yet I also see research which states that "none of the indices referred to in this book have been modified to reflect survivor bias or backfill bias so overstatement of returns in those indices remains." This is an important note for some indices but the primary hedge fund indices (e.g., HFR, Barclay) simply report averages of reporting managers (some with restrictions such as at least two years of history before reporting to lessen new firm effects). They have selection bias but no backfill bias in the traditional sense. As for the S&P 500, once a firm's return is included it never leaves – if a new firm is added its old returns are not added and the index is not revised. Only for a new database for which a historical index is created does an index have backfill bias. Dead firms are also not removed from traditional hedge fund indices so traditional survivor bias (the removal of dead firms from a database) is also not a problem. As a sidebar, the entire issue of the impact of survivor bias in estimating historical returns needs a rethink. Most analyses of survivor bias fail to consider the impact on current estimates of return of the strategy tested, the time period of analysis, or AUM.

As important, when hedge fund indices are used one must be careful that the reported results are not index sensitive. As reported earlier, most hedge fund indices are database dependent. They are representative only.

Exhibit 3a: Yearly Information Ratios

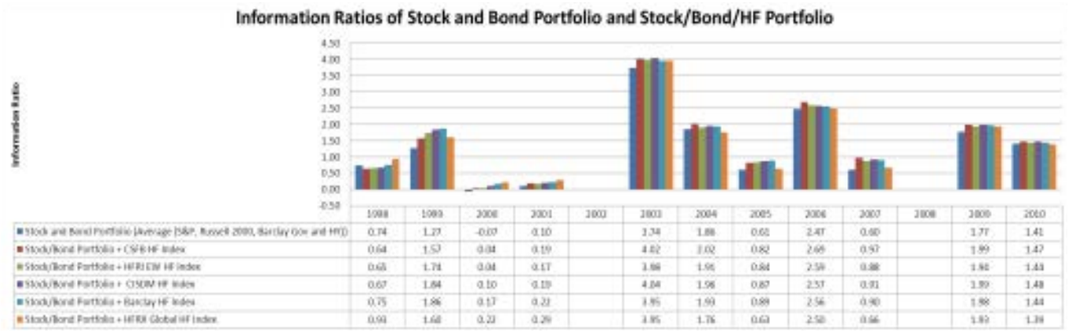


Exhibit 3b: Difference in Yearly Information Ratios

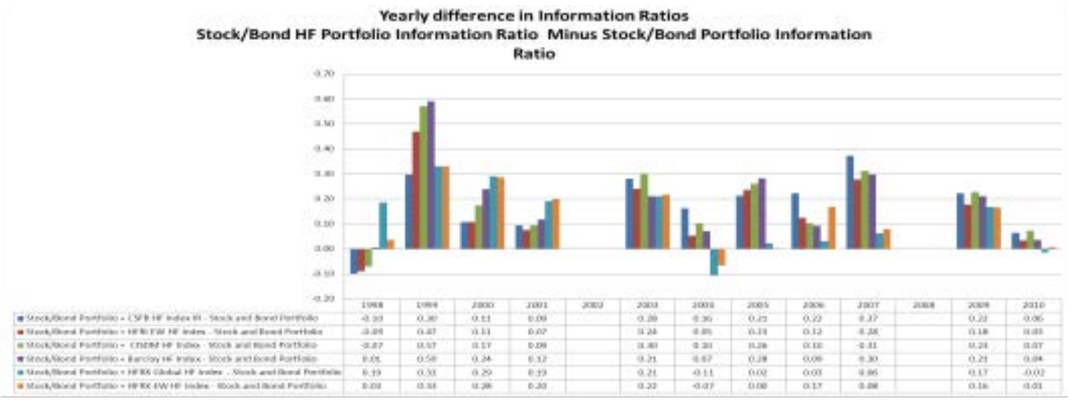
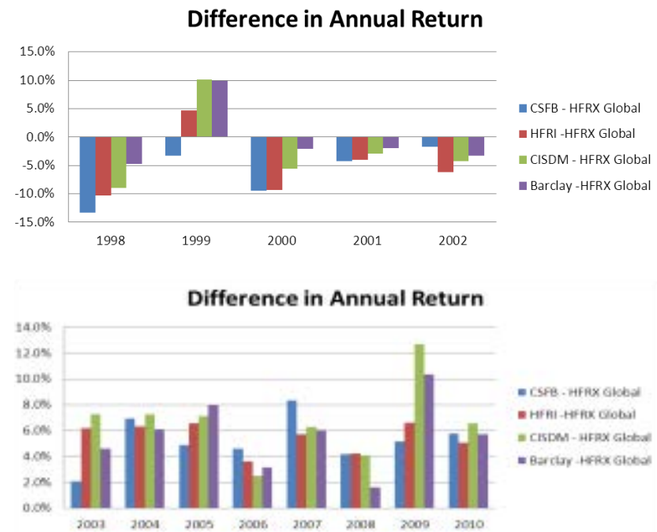


Exhibit 4: Analysis of Comparison Annualized Hedge Fund Index Return



Therefore make sure they are representative (beware of CSFB Equity Market Neutral (which is dominated in certain years by the rise and fall of the Madoff feeder funds included in the data) and beware of the use of newly "algorithmic" constructed indices (e.g., HFRX indices) which may not represent actual historical manager returns). I do not have an answer as to the impact on research results of particular indices used but as shown in Exhibit 4, the hedge fund index used may have implications on the presentation of results.

3.8 Performance Fee and Fund Performance

Researchers often attempt to attribute (their asserted) poor average investor performance to the performance fees of managers. As to the relative extent of manager profit versus investor profit, academic research has often pointed out that the markets are not efficient at the gross level since the difference between total manager profits and investor profits reflects a set of fees to cover business expense and return to skill. Skilled managers may have higher fund fees than other managers, but the net returns to each investor may be the same. Researchers note: Fund fees do not mean fund net profits. Each industry and fund has different management, research and sales costs. Two firms or indices with same fee structure can have dramatically different profitability. Moreover, attempts to ferret out the annual profits to managers within the industry – again without any direct knowledge of the drawdowns etc., of individual strategies or managers – are a whistle in the dark.

One must also be reminded that the fees paid to managers do not equal net profits to them. Fund managers have to pay salaries, operational costs, service costs, travel etc. That is one of the reasons why small managers (e.g., $100,000,000) can hardly exist on the current 1% and 20% unless they work to receive incentive fees (one cannot run a fund on 1 million dollars). (Note that the average AUM of U.S. dollar-denominated funds in the CISDM database at the end of 2009 was $252,867,323. Given a current 1% and 20% performance fee, in a year with no incentive fee, the gross profit of the average fund is $2.5 million. Given all the costs of running a fund, this

provides little net profit to the hedge fund manager). In brief, a more extensive analysis is required to determine the relationship between net profits of the manager relative to the net profit (return) to the investor or whether the net profit after all expenses can be regarded as excessive for the average fund.

3.9 How to Measure "Alpha"

There is nothing new here. Many other researchers have pointed out that referring a differential return between a fund and a set of non-investible factors (S&P 500, MSCI) without using an investible form of those factors, including the costs of rebalancing, etc., provides only an estimate of excess returns relative to the assumed comparison return model. Note, the difference is not alpha as most practitioners or some academics view it, but is a positive "estimated" risk-adjusted return. If one is to use alpha in your presentation by regressing strategy return against non-investible market factors, please footnote that it is not alpha (note this also is true for stock and bond research).

Moreover, many studies have focused on cross-sectional analysis covering periods in which the strategies and investment opportunities fundamentally change. I have no problem with stating that certain strategies provided abnormal return such as going short mortgages in 2006, but going short mortgage today may have a limited opportunity set. Cross sectional analysis over lengthy time periods may have some value, but what is of interest is how and why the process of private pools of capital which finance new strategies or investment opportunities perform over time. Again, rather than concentrating on a cross-sectional analysis of a particular strategy (See Exhibit 5), the time varying pattern of performance (Exhibit 6) may be of greater interest to investors as well as researchers (note the time dependency of the significance of the intercept using the CSFB hedge fund index). While the results show significant intercepts for the other two primary hedge fund indices (CISDM and HFR), the lack of significance of the CSFB intercept is primarily in the pre-2000 period. As mentioned previously, these results are reflective of the potential for analyses of hedge fund benefits to consider various economic conditions rather than any single set of statistical results.

3.10 2008 as a Special Year

2008 was a dramatic market for all investors, however results (Exhibit 7) show that even in 2008 the addition of HF may have increased return and reduced risk relative to a sample stock and bond-only portfolio. However, I do not have a simple answer for what to do about the crash of 2008. 2008 indicates a widely different market volatility environment than almost any other period (check out the number of extreme daily moves, volume, correlations). While indicative of market environments during periods of extreme illiquidity, I would hope that future researchers would take the effort to isolate the market environment of this period before conducting research across various market environments (as a sidebar – please do not report hedge fund skewness and kurtosis without reporting the significance level and, more importantly, as most researchers know, reporting skewness or kurtosis over a period of changing volatility may result in a reported skewness and kurtosis over what is merely a mixture of normal distributions with changing volatility).

4. Future of Hedge Fund Research

The purpose of this "open letter" is to remind academics and practitioners that both should spend a little more time in the other person's shoes (or at least their offices). As schools attempt to develop new education areas to attract students, many look to alternative investments as an area of interest. As the co-founder of the Chartered Alternative Investment Analyst Association (CAIA) (the principal global professional designation in the alternative asset investment industry), I realize the importance of education in alternative investments. The above discussion illustrates where academic/practitioners may have gotten it wrong and illustrates the potential need for academics

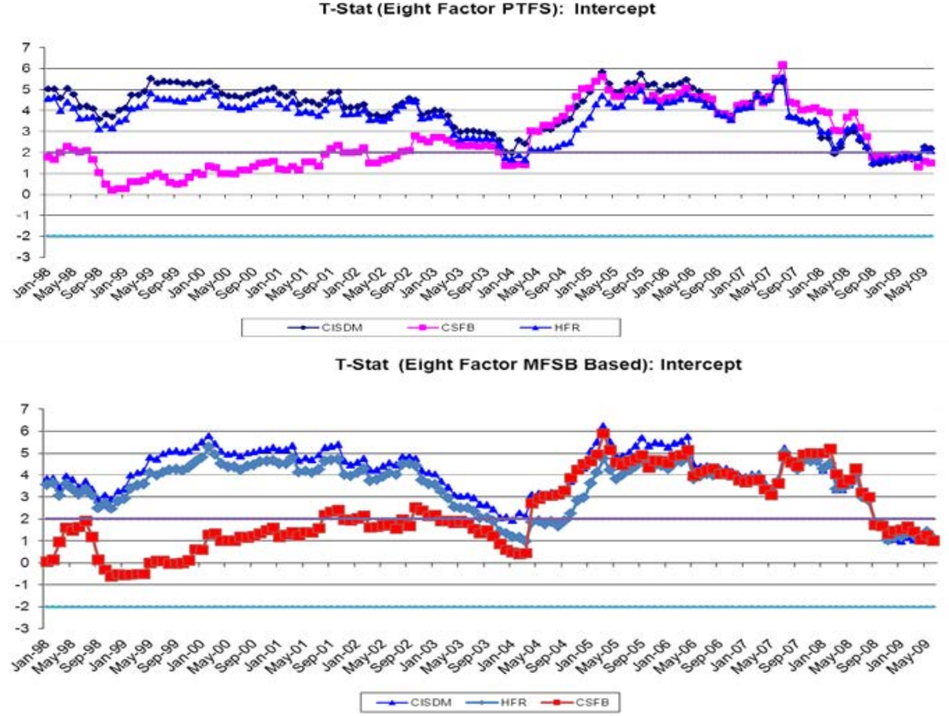
Exhibit 5: Cross Sectional Significance of Intercept: T-Stat

1994-6/2009 -T-Stat	CSFB/Tremont HF Index	Hedge Fund Index	Composite Index
Intercept	3.16	6.29	5.99
S&P 500	1.72	3.21	3.23
Russell 2000	3.83	8.24	8.68
BarCap U.S. Gov't	1.58	-0.34	-0.77
BarCap U.S. Corp. HY	2.54	2.77	2.52
PTFSFX	0.90	0.30	0.41
PTFSBD	-3.06	-1.24	-1.36
PTFSCOM	1.75	0.66	0.78
PTFSSTK	1.56	1.05	1.41
Eight Factor (Fung Hsieh) R2	0.44	0.71	0.72

1994-6/2009 -T-Stat	CSFB/Tremont HF Index	CISDM EW Hedge Fund Index	HFRI FW Composite Index
Intercept	2.44	6.00	5.39
S&P 500	1.88	3.39	3.46
Russell 2000	3.70	8.16	8.63
BarCap U.S. Gov't	1.73	0.09	-0.04
BarCap U.S. Corp. HY	3.05	2.93	2.78
MFSB Currency Subindex	1.42	0.17	0.16
MFSB Interest Rate Subindex	-0.91	-1.40	-1.11
MFSB Physicals Subindex	1.32	1.02	1.57
MFSB Stock Subindex	1.63	0.99	1.19
Eight Factor (Schneeweis Spurgin) R2	0.42	0.72	0.73

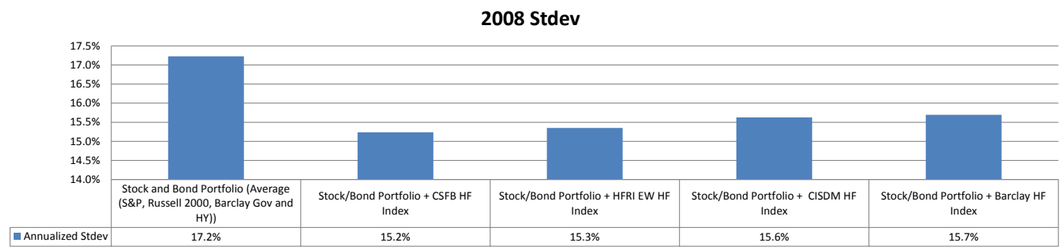
Source: Schneeweis et. al., (2012)

Exhibit 6: Changing Significance of Intercept: T-Stat (Traditional 8 Factor Model)



Source: Schneeweis et. al. (2012)

Exhibit 7: Hedge Fund Return and Risk Benefits in 2008



or practitioners to take the time to learn about the subject. I hope the above will drive a few to consider the CAIA program. It is not that mistakes will not be made as markets change, but I can guarantee that you will have help in understanding those changes.

References

Agarwal, V., and N. Y. Naik. "Risks and Portfolio Decisions Involving Hedge Funds." Review of Financial Studies, 17(1), (2004), pp. 63-98.

Agarwal, V., and N.Y. Naik. "Generalized Style Analysis of Hedge Funds." Journal of Asset Management, Vol 1. No. 1 (2000), pp. 93-109.

Aggarwal, Rajesh K., and Philippe Jorion. "The Performance of Emerging Hedge Funds and Managers." Journal of Financial Economics, 96: 2010a, pp. 238-256.

Aggarwal Rajesh K., and Philippe Jorion. "Hidden Survivorship Bias in Hedge Fund Returns." Financial Analysts Journal, (March/April, 2010), pp. 69-74.

Aggarwal, Rajesh K., J. Buchan, and P. Saint-Laurent. "Three Myths about Hedge Fund Governance." Journal of Alternative Investments, (Forthcoming, 2012).

Amenc, N., and D. Schroder. "The Pros and Cons of Passive Hedge Fund Replication." EDHEC Risk and Asset Management Research Center, (October 2008).

Amin, G.S., and H. Kat. "Welcome to the Dark Side: Hedge Fund Attrition and Survivorship Bias Over the Period 1994-2001", Journal of Alternative Investments, (2003),Vol. 6, No. 1, pp. 57-73.

Aragon, George, and Spencer Martin. "A Unique View of Hedge Fund Derivatives Usage: Safeguard or Speculation?" Working Paper, Carnegie Mellon University, (2009).

Bodi, Z., A. Kane, and A. Marcus. Investments, (McGraw-Hill, 2010).

Brown, S. J., W. N. Goetzmann and R. G. Ibottson. "Offshore Hedge Funds: Survival and Performance, 1989-95." Journal of Business, 72 (1) (1999), pp. 91-117.

Brown, S. J., and W. N. Goetzmann. "Hedge Funds with Style." The Journal of Portfolio Management, (Winter 2003), Vol. 29, No. 2: pp. 101-112.

Capocci, D. and G. Huber. "Analysis of Hedge Fund Performance." Journal of Empirical Finance, 11 (2002), pp. 55-59.

Crowder, G., H. Kazemi, and T. Schneeweis. "Asset Class and Strategy Based Tracking Approaches." Journal of Alternative Investments, (Winter 2011).

Dichev, I. D., and G.Yu. "Higher risk, Lower Returns: What Hedge Fund Investors Really Earn." Journal of Financial Economics, 100 (2011), pp. 248–263

Dietiker, Oliver. "On the Consistency of Hedge Fund Indices Across Providers." (August, 2009) ssrn.com/abstract=1458013.

Dor, A., R. Jagannathan, and I. Meier. "Understanding Mutual Fund and Hedge Fund Styles Using Return-Based Style Analysis." Journal of Investment Management, 1 (1), (2003), pp. 94-134.

Fama, E., and K. R. French. "Common Risk Factors in the Returns on Stocks and Bonds." Journal of Financial Economics, 33 (1993), pp. 3-56.

Fama, E., and K. R. French. "The Cross-Section of Expected Stock Returns." Journal of Finance, 47 (2), (1992), pp. 427-65.

Ferson, Wayne, and Kenneth Khang. "Conditional Performance Measurement Using Portfolio Weights: Evidence for Pension Funds." NBER Working Paper 8790, (2002).

Ferson, W. E., and C. R. Harvey. "Conditioning Variables and the Cross Section of Stock Returns." Journal of Finance, 54 (1999), pp. 325-1360.

French, K., Ken French Data Library. http://mba.tuck.dartmouth.edu/pages/faculty/ken.french/data_library.html.

Fung, W., and D. A. Hsieh. "Empirical Characteristics of Dynamic Trading Strategies: The Case of Hedge Funds." Review of Financial Studies, 10, (1997), pp. 275-302.

Fung, W., and D. A. Hsieh. "Asset-Based Style Factors for Hedge Funds." Financial Analyst Journal (September/ October, 2002), pp.16-27.

Fung, W., and D. A. Hsieh. "Hedge Funds: An Industry in Its Adolescence." Federal Reserve Bank of Atlanta Review, (4th Quarter, 2006).

Fung, W., and D. A. Hsieh. "Measurement Biases in Hedge Fund Performance Data: An Update." Financial Analyst Journal, Vol. 65. No. 3, (2009), pp. 36-38.

Fung, W., D. Hsieh, N. Naik, and T. Ramadorai. "Hedge Funds: Performance, Risk and Capital Formation." Journal of Finance, 63, (2008), pp.1777-1803.

Griffin, J., and J. Xu. "How Smart are the Smart Guys? A Unique View from Hedge Fund Stock Holdings." The Review of Financial Studies, 22, (2009), pp. 2531-2570.

Gupta, B., E. Szado and W. Spurgin. "Performance Characteristics of Hedge Fund Replication Programs." Journal of Alternative Investments, (Fall 2008), pp. 61–68.

Hasanhodzic, J., and A. Lo. "Can Hedge-Fund Returns Be Replicated?: The Linear Case." Journal of Investment Management, Vol. 5, No. 2, (Second Quarter 2007).

Jaeger, L., and C. Wagner. "Factor Modeling and Benchmarking of Hedge Funds: Can Passive Investments in Hedge Fund Strategies Deliver?" Journal of Alternative Investments, (Winter 2005), pp. 9-36.

Jagannathan, Ravi, and Zhenyu Wang. "The Conditional CAPM and the Cross-Section of Expected Returns." Journal of Finance, 51, (1996), pp. 3-53.

Jegadeesh, Narasimhan, and Sheridan Titman. "Profitability of Momentum Strategies: An Evaluation of Alternative Explanations." Journal of Finance, 56, (2001), pp. 699-720.

Kat, H., and J. Palaro. "Who Needs Hedge Funds? A Copula-Based Approach to Hedge Fund Return Replication." Alternative Investment Research Centre. Case Business School, Working Paper #27. (November 2005).

Kat, H., and J. Palaro. "Tell Me What You Want, What You Really, Really Want! An Exercise in Tailor-Made Synthetic Fund Creation." Alternative Investment Research Centre. Case Business School, Working Paper #36. (November 2006a).

Kat, H. and J. Palaro. "Hedge Fund Indexation the Fund Creator Way." Alternative Investment Research Centre. Case Business School, Working Paper #38. (November 2006b).

Kazemi, H., Y. Li and T. Schneeweis. "Conditional Performance of Hedge Funds." CISDM Working Paper, (2008).

Kazemi, H., and T. Schneeweis. "Conditional Performance of Hedge Funds." CISDM Working Paper, (2004).

Kazemi, H., and T. Schneeweis. "The Use of ETFs in Hedge Fund Replication: Case Examples." INGARM Working Paper, (2010).

Kazemi, H., E. Szado and T. Schneeweis. "IRR based hedge fund analysis – User Beware." INGARM Working Paper, (2012).

Lack, S., Hedge Fund Mirage (John Wiley, 2012).

Lequex, P., Financial Markets Tick by Tick: Insights in Financial Market Microstructure. (New York: John Wiley, 1999).

Lo., Andrew. "The Dynamics of the Hedge Fund Industry." The Research Foundation of the CFA, (2005).

Malkiel, Burton, and A. Saha. "Hedge Funds: Risk and Return." Financial Analyst Journal (November/ December, 2005), pp. 80-88.

Naik, N., T. Ramadorai and M. Stromqvist. "Capacity Constraints and Hedge Fund Strategy Returns." European Financial Management, 13 (2007), pp. 239-256.

What a CAIA Member Should Know

Schneeweis, T. "Dealing with the Myths of Managed Futures." Journal of Alternative Investments (Summer 1998a), Vol. 1, No. 1: pp. 9-17.

Schneeweis, T. "Dealing with the Myths of Hedge Fund Investment." Journal of Alternative Investments, (Winter 1998b), Vol. 1, No. 3: pp. 11-15.

Schneeweis, T., "The Myths of Hedge Funds." INGARM Working Paper, (2010a).

Schneeweis, T., "The Benefits of Hedge Funds." INGARM Working Paper, (2010b).

Schneeweis, T., G. Crowder, and H. Kazemi. The New Science of Asset Allocation. (John Wiley, 2010).

Schneeweis, T., and H. Kazemi. "Factor Versus Trading Style Based Return Estimates." CISDM Working Paper (2006).

Schneeweis, T., and H. Kazemi, "An Academic Response to the "Hedge Fund Mirage" INGARM Working Paper, (2012).

Schneeweis, T., H. Kazemi and G. Martin. "Understanding Hedge Fund Performance: Research Issues Revisited - Part I." Journal of Alternative Investments, 5, (2002), pp. 6-22.

Schneeweis, T., H. Kazemi and G. Martin. "Understanding Hedge Fund Performance: Research Issues Revisited - Part II." Journal of Alternative Investments, 7, (Spring 2003), pp. 8-30.

Schneeweis, T., H. Kazemi and V. Karavas. "Eurex Derivative Products in Alternative Investments: The Case for Hedge Funds." CISDM Research Report, (2003).

Schneeweis, T., H. Kazemi and E. Szado. "Hedge Fund Database "Deconstruction": Are Hedge Fund Databases Half Full or Half Empty?" Journal of Alternative Investments, (Fall 2011), Vol. 14, No. 2: pp. 65-88.

Schneeweis, T., H. Kazemi and E. Szado. "Hedge Fund Return-Based Style Estimation Models: A Review on Comparison Hedge Fund Indices." Forthcoming: Journal of Alternative Investments (Fall 2012a).

Schneeweis, T., H. Kazemi and E. Szado. "What A Difference a Day, Week, Month Makes, AIAR Forthcoming, 2012b).

Schneeweis, T., and R. Spurgin. "Benchmark Determination for Managed Futures." CISDM Working Paper (1998a).

Schneeweis, T., and R. Spurgin. "A Comparison of Return Patterns in Traditional and Alternative Investments." in Sohail Jaffer ed. Alternative Investment Strategies (Euromoney, 1998b), pp.157-188.

Schneeweis, T., and R. Spurgin. "Multi-Factor Analysis of Managed Futures, Hedge Funds, and Mutual Funds. Return and Risk Characteristics." Journal of Alternative Investments (Fall 1998c), pp.1-24.

Schneeweis, T., R. Spurgin and H. Kazemi. "Eurex Derivative Products in Alternative Investments: The Case for Managed Futures." CISDM Research Report, (2003).

Schneeweis, T., and E. Szado. "Madoff: A Return Based Analysis." Journal of Alternative Investments, (Spring 2010), Vol. 12, No. 4: pp. 7-19.

Appendix: Questions in Hedge Fund Investment

Question 1: Do stocks and bonds provide adequate diversification for investors?

Question 2: Do hedge funds provide adequate diversification for bond investors?

Question 3: Do hedge funds provide adequate diversification for equity investors?

Question 4: Do hedge funds provide diversification for stocks and bond portfolios?

Question 5: Is a hedge fund's past performance a predictor of future performance?

Question 6: Are hedge funds riskier than stock and bond investment?

Question 7: Do hedge funds add diversification benefits to portfolios?

Question 8: Are hedge funds absolute return vehicles?

Question 9: Do hedge fund strategies provide diversification to stock and bond portfolios?

Question 10: Is manager return-to-risk as consistent as strategy-return-to-risk?

Question 11: Do all fund of funds provide similar return and risk opportunities?

Question 12: Do hedge funds require their own unique measures of performance?

Question 13: How does survivor bias impact the measurement hedge fund index returns?

Question 14: Is hedge fund performance consistent with the size of fees?

Question 15: Is fund access an important part of potential hedge fund return?

Question 16: Can hedge funds and hedge indices be replicated?

Question 17: How usable are hedge fund data sets?

Question 18: Do funds that follow the same type of strategy behave very differently?

Question 19: Do similar indices from different index providers behave very differently?

Question 20: Are the true risks of hedge funds underestimated?

Question 21: Are hedge fund distributions normally distributed?

Question 22: Can information ratios be highly misleading?

Question 23: Can alphas be highly misleading?

Question 24: Is hedge fund diversification a free lunch?

Question 25: Do hedge funds combine well with equity?

Question 26: Is modern portfolio theory too simplistic to deal with hedge funds?

Question 27: Is style purity important in the construction of hedge fund of funds?

Question 28: Are composite hedge fund indices useful?

Author Bio

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Who Sank The Boat?

Hilary Till, Research Associate at EDHEC Risk Institute,
Co founder, Premia Risk Consultancy, Inc.

Challenges to Popular Narratives on Commodity Futures Speculation

1.1. The Economic Role of Commodity Futures Markets

We will start by noting that the terms, "hedging" and "speculation" are not precise. For example, a grain merchant who hedges wheat inventories creates a "basis" position and is then subject to the volatility of the relationship between the spot price and the futures price of the commodity. The grain merchant is, in effect, speculating on the "basis." The basis relationship tends to be more stable and predictable than the outright price of the commodity, which means that the merchant can confidently hold more commodity inventories than otherwise would be the case. What futures markets make possible is the specialization of risk-taking rather than the elimination of risk.

Who would take the other side of a commercial hedger's position? Answer: A speculator who specializes in that risk bearing. The speculator may be an expert in the term structure of a futures curve and would spread the position taken on from the commercial hedger against a futures contract in another maturity of the futures curve or the speculator may spread the position against a related commodity. Till and Eagleeye (2004, 2006) provide examples of both intra-market spreading and inter-market spreading, which arise from such risk-bearing.

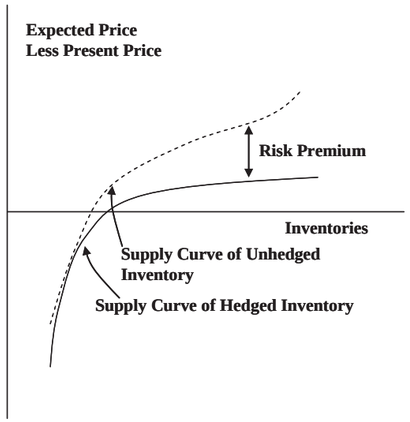
Alternatively, the speculator may detect trends resulting from the impact of a commercial's hedging activity, and be able to manage taking on an outright position from a commercial because the speculator has created a large portfolio of unrelated trades. Presumably, the speculator will be able to dampen the risk of an outright commodity position because of the diversification provided by other unrelated trades in the speculator's portfolio. In this example, the speculator's risk-bearing specialization comes from the astute application of portfolio theory.

What then is the economic role of commodity speculation and its "value to society"? Ultimately, successful commodity speculation results from becoming an expert in risk bearing. This profession enables commercial entities to privately finance and hold more commodity inventories than otherwise would be the case because they can lay off the dangerously volatile commodity price risk to price-risk specialists. Those commercial entities can then focus on their area of specialty: the physical creation, handling, transformation, and transportation of the physical commodity.

Cootner (1961) wrote that in the absence of being able to hedge inventories, a commercial participant would not rationally hold "large inventories … unless the expected price increase is greater than that which would be required to cover cash storage costs by an amount large enough to offset the additional risk involved…The overall shape of the supply curve of storage for

a wide range of commodities (based on empirical studies) has fallen into the pattern shown in …" Exhibit 1, according to Cootner (1961). This graph illustrates that greater inventories can be held, when hedged, without requiring expected future price increases.

Exhibit 1: Supply Curve of Storage



Source: Cootner (1961), Figure 1b.

The 1996 book, *The Great Wave: Price Revolutions and the Rhythm of History*, discusses European history since the 1200s. Broadly speaking, past eras of grain price inflations, whatever the cause, resulted in devastating consequences for civilizational advancement. Over the centuries, two innovations have lessened these tragic episodes: international trade and the increase in inventory holdings. Commodity futures markets are a trial-and-error development that serves the latter civilizational advancement.

If the existence of price-risk-bearing specialists ultimately enables more inventories to be created and held than otherwise would be the case, we would expect their existence to lead to the lessening of price volatility. To be clear, why would this be the case?

The more speculators there are, the more opportunity there is for commercial hedgers to find a natural other side for hedging prohibitively expensive inventories. This in turn means that more inventories can be economically held. Then with more inventories, if there is unexpected demand, one can draw from inventories to meet demand, rather than have prices spike higher to ration demand.

There is some empirical evidence to support the theory that speculative involvement actually reduces price volatility. Brunetti et al. (2011) examined five markets, including corn, over the period 2005 to 2009 and found that: "… speculative trading activity largely reacts to market conditions and reduces volatility levels, consistent with the hypothesis that speculators provide valuable liquidity to the market."

In addition, Professor David Jacks examined what happened to commodity-price volatility, across countries and commodities, before and after specific commodity-contract trading has been prohibited in the past. Jacks (2007) also examined commodity-price volatility before and after the establishment of futures markets, across time and across countries. Jacks' study included data from 1854 through 1990. He generally, but not always, found that commodity-price volatility was greater when there were not futures markets than when they existed, over 1-year, 3-year, and 5-year timeframes.

More recently, Irwin and Sanders (2011) note that "[commodity] index positions [have] led to lower volatility in a statistical sense," when examining 12 agriculture markets and 2 energy futures markets from June 2006 to December 2009. Specifically: "… there is mild evidence of a negative relationship between index fund positions and the volatility of commodity futures prices, consistent with the traditional view that speculators reduce risk in the futures markets and therefore lower the cost of hedging." (p. 24)

1.2. Brian Wright and "Who Sank the Boat?"

1.2.1. Grains

Professor Brian Wright has discussed the difficulty of understanding intuitively how to apportion causality when analyzing commodity price spikes. Wright (2011b) uses a delightful example from the popular Australian (and New Zealander) children's story, "Who Sank the Boat?" to illustrate how a non-linear function can make it difficult to apportion blame amongst various contributing factors.

The Story of "Who Sank the Boat?"

"Imagine a pig carrying an umbrella, a sheep doing knitting, and a cow and a donkey and a mouse, all walking along on their back legs in single file.

What else is there to do on a fine sunny morning but to go for a row in the boat?

But there is one big question. 'Who sank the boat?'

We are told the outcome right up front, but who was the culprit? The tension and suspense is fantastic as each creature in turn gets aboard. The donkey is a smart critter since he knew how to balance the weight of the cow. The sheep was just as smart since he got on the opposite side to the pig. We are now very low in the water now, but still afloat.

The smallest and the lightest of the friends (a naughty little mouse) now gets on board. … 'You DO know who sank the boat' - don't you?"

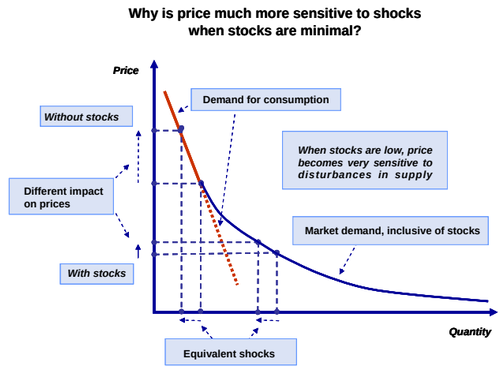
The relevance of this story to commodity price spikes is as follows. Professor Christopher Gilbert has explained why temporarily large price rises in commodity markets can occur (in Gilbert 2007): "Commodity markets are characterized by very low short-run elasticities of both production and consumption, although long-run supply elasticities are probably high. … [I]n a tight market in which only minimum stocks are held, the long-run price becomes irrelevant. With inelastic short-run supply and demand curves, the market clearing price ceases to be well defined, not in the sense that the market does not clear, but in the sense that it will be very difficult to assess in advance at what price, market clearing will result. Fundamentals-based analysis may show where the price will finish, but this will provide very little guide as to where it will go in the meantime." (p. 23) Gilbert (2007) further explains that "when markets become tight, inelastic supply and demand make prices somewhat arbitrary, at least in the short term. There will always be a market clearing price, but its level may depend on incidental … features of the market."

In Wright's retelling of the children's story, the incidental factor was the naughty little mouse jumping into the boat. Wright (2011b) also provides a technical chart to show how a supply disturbance has a dramatically different impact on price, depending on whether one is in a period of low- stocks-relative-to-consumption or not. Please see Exhibit 2. Wright (2011a) discusses how the empirical evidence shows that "[price] spikes occur when discretionary stocks are negligible."

In the recent past, have we been in a period where one had to be concerned about grain inventories? Exhibit 3 illustrates corn's inventory-to-use situation from 1965 through 2011. Lewis (2011) explained the significance of Exhibit 3 as follows: "[T]he world would exhaust global corn inventories in just 47 days on current consumption patterns. This is the most precarious level of corn inventories since 1974."

Professor Scott Irwin explained the situation with corn prices at the time to White (2011): "We are in the part of the [corn] price curve that, in 'economist-speak,' is highly non-linear." The current "bull market rally, following so soon after the 2007-08 rally, seems similar to the early-mid 1970s series of rallies," recorded White (2011) in his interview with Irwin. This comparison is apparent from Exhibit 3's price series. Continues Irwin in White (2011): "… the true spike or boom phase will probably last longer in this episode because of the biofuel mandates and high fuel prices working together." Because of governmental policies mandating ethanol use, price may not function effectively to ration corn demand in the future, a constraint that did not exist in the 1970s.

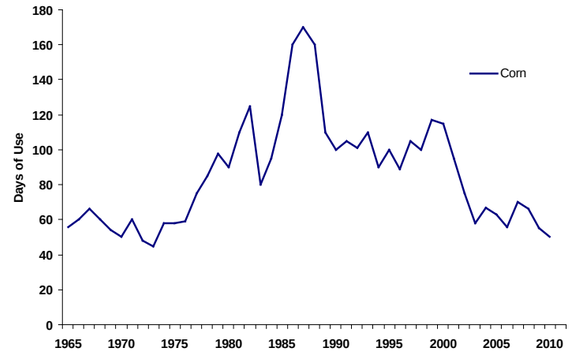
Exhibit 2: Impact of Supply Shocks



Source: Wright (2011b), Slide 39.

During the U.S. Commodity Futures Trading Commission's (CFTC's) "Conference on Commodity Markets" in August 2011, Professor Wright discussed the consequences for grain prices when inventories get quite low (Wright, 2011c): "[With a] non-linear function, … you can't say 10% is [due to] this; and 20% is [due to] that, because it is the last 5 or 10% that causes all the chaos. You drive … [grain] stocks down to a very low level [as in 2008] and suddenly you get this very inelastic demand, making even tiny little pipsqueak countries like, for example, just to pick one at random, (Australia, have large market impact) Australia's drought will cause havoc in the markets when you have no stocks because once you …[have] no stocks you're naked before this and every price movement ... has to be met by someone not consuming and that's very hard[.] What would the price have to be to stop you from having your muffins in the morning?"

Exhibit 3: Inventory-to-Use Ratio for Corn
Total Available Stocks Divided by Daily Consumption



Source: Lewis (2011), Figure 1.

In Wright (2011a), the commodity economist provides a more formal explanation: "Wheat, rice, and corn are highly substitutable in the global markets for calories …, and when aggregate stocks decline to minimal feasible levels, prices become highly sensitive to small shocks, consistent with the economics of storage behavior. In this decade, aggregate stocks of grain calories available to participants in the global grain market … declined, due to the imposition of new and substantial biofuel mandates on markets subject to otherwise fairly normal ranges of shifts in yields and demands, making markets unusually sensitive to all short-run disturbances including the Australian drought and other regional grain production problems, as well as biofuel demands in excess of mandates induced by spikes in petroleum prices. To protect their own vulnerable … consumers, key exporters restricted supplies in 2007, exacerbating the price rise. … If [biofuel] mandates are kept at current levels, and petroleum prices do not rise higher, then it is likely that over time the market will adjust to a less volatile equilibrium, on a higher price path than without biofuels … [I]t is possible that mandates could expand to outrun yield increases for many years, and keep grain prices high and volatile as they are today …" (p. 33)

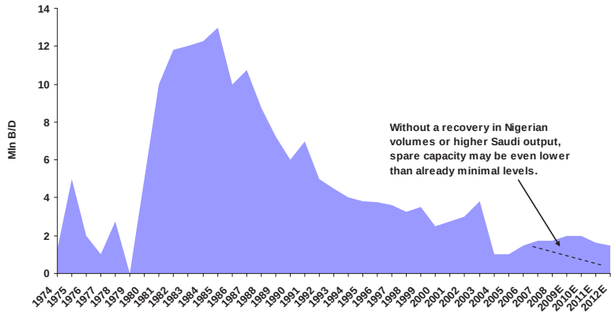
Agreeing with the concerns of both Irwin and Wright, Richard Gower, who is a policy advisor for Oxfam UK, has noted that developed countries should consider introducing "a price trigger so that when food prices are high, you divert those stocks of grains from fuel to food." (Grower, 2011)

1.2.2. Crude Oil

Effective spare capacity in OPEC was only 1.5-million barrels per day in July 2008, according to IEA (2008b). Exhibit 4 puts this excess-capacity cushion in historical context. One-and-a-half-million-barrels-per-day was an exceptionally small safety cushion, given how finely balanced global oil supply-and-demand was. Given the risk of supply disruptions due to naturally occurring weather events as well as due to well telegraphed and perhaps well rehearsed geopolitical confrontations, one would have preferred at the time for this spare capacity cushion to have been much higher.

In Till (2008b), we discussed what may have caused the oil price rally that culminated in the July 2008 price spike. There were a number of plausible fundamental explanations that arose from any number of incidental factors that came into play when supply-and-demand was balanced so tightly, as was the case with light sweet crude oil.

Exhibit 4: Annual OPEC Immediately Deliverable Spare Capacity 1974 - 2012E



Source: Murti *et al.* (2008), Exhibit 3.

In 2008, these incidental factors included a temporary spike in diesel imports by China in advance of the Beijing Olympics, purchases of light sweet crude by the U.S. Department of Energy for the Strategic Petroleum Reserve, instability in Nigeria, and tightening environmental requirements in Europe. One should add that this is not an exhaustive list.

The natural conclusion to observing that many seemingly inconsequential factors, in combination, could lead to such a large rise in the price of crude oil during the first seven months of 2008, is that the market was signaling a pressing need for an increase in spare capacity in light sweet crude oil, however achieved.

Once we understand that 1.5 million barrels of OPEC spare capacity is quite tight, one can understand the importance of stability in North Africa in preventing the potential for further oil price spikes. Exhibit 5 shows the components of OPEC spare capacity as of 2011.

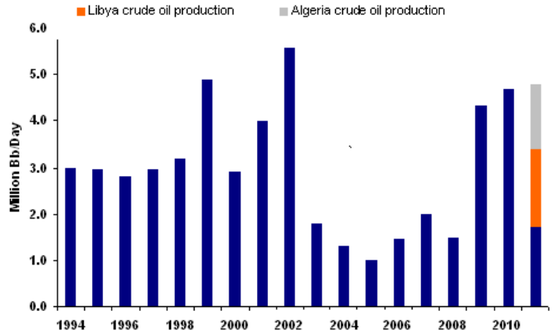
1.3. Evidence on the Impact of Commodity Index Funds

Did commodity index investments in 2008 cause the 7-month oil-price rally that culminated in July of 2008? According to data released by the CFTC on September 11, 2008, this is an unlikely cause, given that total over-the-counter (OTC) and on-exchange commodity index investment activity in oil-futures-contract-equivalents actually declined from December 31, 2007 through June 30, 2008. Please see Exhibit 6.

Partly because of results such as in Exhibit 6, a futures exchange spokesman stated in early 2010 that the U.S. regulatory attention on oil markets had shifted to a focus on "market concentration and not about speculation" because the evidence on excessive speculation did not bear out. "There was no smoking gun," reported Collins (2010).

According to Irwin and Sanders (2010): "[A set of] causality regressions provide no convincing evidence that positions held by index traders or swap dealers impact market returns. … [Our] results tilt the weight of evidence … in favor of the argument that index funds did not cause a bubble in commodity futures prices."
The policy implication of the available evidence on the market impact of commodity index funds is straightforward: … regulatory proposals to limit speculation – especially on the part of index funds – are not justified and likely will do more harm than good. In particular, limiting the participation of index fund investors would rob the

Exhibit 5: OPEC Spare Capacity Scenarios



Source: Lewis *et al.* (2011), figure on p.1.

Exhibit 6: Commodity Index Activity

Total OTC and On-Exchange Commodity Index Investment Activity

	12/31/07	3/31/08	6/30/08
Crude Oil Index Values Measured in Futures [Contract] Equivalents	**408,000**	**398,000**	**363,000**

Source: CFTC (2008). Staff Report on Commodity Swap Dealers & Index Traders With Commission Recommendations

commodity futures markets of an important source of liquidity and risk-absorption capacity at a time when both are in high demand." (pp. 2-3)

1.4. There is an Increase in the Co-Movements Between Commodity Prices and Financial Asset Prices, But What is the Implication for "Social Welfare"?

This is the question posed by Fattouh et al. (2012). These researchers note that in the case of oil: "[G]reater financial market integration may reduce the market price of risk and increase the level of inventories by reducing the cost of hedging. While this mechanism induces an increase in the spot price, the higher level of inventories reduces the chances of future price hikes." (p. 8.). Fattouh et al. (2012) continue: "[E]vidence of increased co-movement between the spot price of oil, oil futures, and other asset prices does not imply that the [past] surge in the spot price was caused by financial speculators. … To the extent that global macroeconomic fundamentals have changed in recent years, … that fact could provide an alternative explanation for the observed co-movement ..." (p. 8.)

Kawamoto et al. (2011) note that: "With regard to the cross-market linkage between commodity and stock

markets, the correlation coefficient of the return between the markets has risen rapidly since the second half of 2008." (p. 4)

Market practitioners are well aware of the increase in correlations across all asset classes, including commodities, since the onset of the Global Financial Crisis. In April 2012, Williams et al. (2012) explained that: "In a world where disparate assets move in lockstep, their individual identities become lost. Assets now behave as either risky assets or safe havens … Synchronized markets provide little diversification …" (p. 1) Williams et al. (2012) refer to this new market behavior as "Risk On – Risk Off (RORO)." RORO may be a "consequence of a new systemic risk factor. We have seen global intervention, QE [Quantitative Easing] and policy response of an unprecedented scale across many countries – and markets are pricing in the bimodal nature of their consequences. Ultimately, either policy response works and there is indeed a global recovery, or they fail and the sovereign debt issues across the developed world lead to new and even more serious [financial] crises. Individual assets (including commodities), while still influenced by their fundamentals, are dominated by the changing likelihood of such a recovery. Disparate markets now have an ascendant common price component and correlations surge whenever an unsettling event increases the degree of uncertainty." (p. 4)

Cheng et al. (2012) provide convincing evidence of one aspect of the "RORO" environment, which began after the 2008 Lehman crisis. "… [W]hile financial traders accommodate the needs of commercial hedgers in normal times, in times of financial distress, financial traders reduce their net long positions (in commodities) in response to an increase in the VIX[,] causing the risk to flow to commercial hedgers." The VIX is an index of equity option implied volatilities, calculated by the Chicago Board Options Exchange, and is frequently seen as an "investor fear gauge." The researchers state that: "Our analysis shows that while the positions of CITs (Commodity Index Traders) and hedge funds complement the hedging needs of commercial hedgers in normal times, their own financial distress rendered them liquidity consumers rather than providers during the financial crisis." (p. 6) Cheng et al. (2012) also show how sensitive the returns of all individual commodities have become to changes in the VIX.

The G20 Study Group on Commodities (2011) acknowledged this new state-of-the-world: "The expansion of market participants in commodity markets increases market liquidity (including in longer term contracts), thereby accommodating the hedging needs of producers and consumers. … On the other hand … (the) increased correlation of commodity derivatives markets and other financial markets suggests a higher risk of spillovers." (p. 43)

The post-2008 risk environment may predominate for at least a decade. Ward (2012) quotes Ray Dalio of Bridgewater Associates as explaining: "Deleveragings go on for about 15 years. The process of raising debt relative to incomes goes on for 30 or 40 years, typically. There's a last big surge, which we had in the two years from 2005 to 2007 and from 1927 to 1929, and in Japan from 1988 to 1990, when the pace becomes manic. That's the classic bubble. And then it takes about 15 years to adjust."

What this means for commodity market participants, whether they are hedgers or speculators, is that results such as those in the Cheng et al. (2012) study will have to be considered in managing commodity risk. This is similar to the advice provided by Williams et al. (2012) in advising asset managers to rethink portfolio construction in an era of assets losing their "individual identities."

Regarding the Cheng et al. (2012) study, one should add that it is not a new phenomenon for commercial market participants to have to step in when risk-bearing-specialists become in distress. As discussed in Till (2008a), the hedge fund, Amaranth, took on price risk from physical natural gas participants, who had wanted to hedge their forward production. When the hedge fund became in distress in 2006, it is likely that these commercial hedgers were then the ultimate risk takers on the other side of Amaranth's distressed trades, and so benefited from the temporary dislocations that ensued from the fund's collapse. In other words, it does not appear that the commercial natural-gas industry was damaged by the crisis caused by Amaranth; in fact, commercial-market participants likely benefited. Natural gas commercial hedgers would have earned substantial profits had they elected to realize their hedging windfall during the three months that followed the Amaranth debacle.

That said, what is new about the current risk environment is that a price-risk-bearing specialist may not be able to assume diversification across individual commodities (and other financial instruments) when using portfolio theory to manage commodity risk. As a result, this type of risk specialist must reduce leverage in this activity. Assuming this conclusion is embraced in a widespread manner, the "higher risk of spillovers" resulting from the "financialisation of commodities" may lessen.

2. Response to Popular Narratives on Commodity Price Spikes

2.1. Placeboes

The main problem with proposals to restrict speculative participation, so as to avoid future price spikes, is that this solution may actually be a placebo.

Former U.S. CFTC Commissioner Michael Dunn noted in an article by Loder and Brush (2011): "My fear is that, at best, position limits are a cure for a disease that does not exist. Or at worst, a placebo for one that does." According to Lynch (2010), a U.S. CFTC economist memorandum from the previous year stated that: "In our analysis of the impact of position limits, we find little evidence to suggest that changes from a position limit regime to an accountability level regime or changes in the levels of position limits impact price volatility in either energy or agricultural markets. Our results are consistent with those found in the existing literature on position limits."

2.1.1. Agriculture

One should acknowledge that some U.S. agricultural futures markets currently do operate under a position-limit regime defined by the CFTC, so one does have to be careful in arguing that position limits are necessarily a particularly onerous constraint on market participants.

2.1.2. Oil

Consistent with Dunn's view, IEA (2008a) warned, "Blaming speculation is an easy solution[,] which avoids taking the necessary steps to improve the supply-side access and investment or to implement measures to improve energy efficiency."

A 2010 policy brief from the Food and Agriculture Organization (FAO) of the United Nations provides a useful note of caution, regarding making position limits too onerous:

"Efforts to reduce speculation in futures markets might … have unintended consequences. Mechanisms to intervene in futures markets, if the futures price diverges from an equilibrium level determined by market fundamentals (a level which in itself will be difficult to determine), might divert speculators from trading and thus lower the liquidity in the market available for hedging purposes." The FAO policy brief also reinforces the importance of appropriate regulatory measures, including "increasing transparency and the amount of available information on futures trading."

Research Review

2.2. Transparency of Position-Taking

One can easily endorse proposals for transparency in position-taking in all financial centers. This endorsement is the result of hard-won lessons from U.S. history. Essentially, the historical lessons from past challenges to futures trading in the U.S. are as follows:

a. Constantly revisit the economic usefulness of commodity futures trading;

b. Insist upon transparency in market-participation and position data in a sufficiently disaggregated fashion as to be useful, but also in a sufficiently aggregated fashion as to not violate individual privacy.

c. Carry out empirical studies to confirm or challenge the benefits and/or burdens of futures trading.

2.3. Commodity Index Products

Regarding any proposals to ban commodity index products, one would think this would be an unfortunate precedent without solid evidence of these products being a "detriment to society."

2.4. Final Note: "Speculative" Regulatory Proposals

Modern commodity futures markets have been the product of 160 years of trial-and-error efforts. One result has been the creation of an effective price discovery process, which in turn enables the coordination of individual efforts globally in dynamically matching current production decisions with future consumption needs in commodities. The price risk management benefits of these markets are also particularly emphasized in this article.

Before performing surgery on these institutions, international policymakers may want to tread carefully and not adopt "speculative" regulatory proposals whose ultimate effects are unknown.

3. Conclusion

The present concern with recent food and oil price spikes is fully justified. One can be concerned, though, that proposals to restrict speculation may actually be placeboes that distract from addressing the real causes of these price spikes. One hopes that advisers to influential policymakers will do careful research on the economic theory and practice of commodity futures markets. They would then understand why a large body of academics and practitioners desire to protect these vital institutions.

Endnotes

This article is excerpted from Till (2012).

The information contained in this article has been assembled from sources believed to be reliable, but is not guaranteed by the author.

The ideas and opinions expressed in this article are the sole responsibility of the author. As such, the views expressed in this paper do not necessarily reflect those of organizations with which the author is affiliated.

References

Allen, P., 1996, Who Sank the Boat? New York: The Putnam and Grosset Group. [The children's story is reviewed and summarized at Amazon.com. Retrieved from: http://www.amazon.com/review/R1KQXHE1FIBKKL/ref=cm_cr_pr_viewpnt#R1KQXHE1FIBKKL on 21 May 2011.]

Brunetti, C., Büyükşahin, B., and J. Harris, 2011, "Speculators, Prices and Market Volatility," Johns Hopkins University, International Energy Agency, and University of Delaware Working Paper, 6 January. Available at SSRN: http://ssrn.com/abstract=1736737 .

[CFTC] Commodity Futures Trading Commission, 2008, "Staff Report on Commodity Swap Dealers & Index Traders with Commission Recommendations," 11 September.

CFTC, 2009, "Impact of Position Limits on Volatility in Energy Futures Markets," Staff Memorandum of 21 August, which was released to the Wall Street Journal through a Freedom of Information Act request, according to Lynch (2010).

Cheng, I.H., Kirilenko, A., and W. Xiong, 2012, "Convective Risk Flows in Commodity Futures Markets," University of Michigan, Commodity Futures Trading Commission, and Princeton University Working Paper, February.

Collins, D., 2010, "How Hard Will Hard Limits Be?", Futures Magazine, January, pp. 56-58.

Cootner, P., 1961, "Common Elements in Futures Markets for Commodities and Bonds," The American Economic Review, Vol. 51, No. 2, Papers and Proceedings of the Seventy-Third Annual Meeting of the American Economic Association, May, pp. 173-183.

[FAO] Food and Agriculture Organization of the United Nations, 2010, "Price Surges in Food Markets," Economics and Social Perspectives, June.

Fattouh, B., L. Kilian, and L. Mahadeva, 2012, "The Role of Speculation in Oil Markets: What Have We Learned So Far?," Oxford Institute for Energy Studies and University of Michigan Working Paper, 18 March.

Fischer, D., 1996, The Great Wave: Price Revolutions and the Rhythm of History, New York: Oxford University Press.

G20 Study Group on Commodities, 2011, "Report of the G20 Study Group on Commodities under the chairmanship of Mr. Hiroshi NAKASO [of the Bank of Japan]," November.

Gilbert, C., 2007, "Commodity Speculation and Commodity Investments," University of Trento (Italy) and Birkbeck College (London), Paper for Presentation at "The Globalization of Primary Commodity Markets," Stockholm, 22-23 October.

Gower, R., 2011, "Commodity Price Volatility: Can Free Markets Still Feed and Power the World?," Conference organized by the French Embassy in London, in partnership with the Financial Times, the London School of Economics and Political Science, Chatham House, the Franco-British Council, and the Institute français, Transcription of Remarks, 1 June. Retrieved from: http://www.youtube.com/watch?v=iCYM2vxxang on 16 July 2011.

[IEA] International Energy Agency, 2008a, "Oil Market Report," 10 July.

IEA, 2008b, "Oil Market Report," 12 August.

Irwin, S. and D. Sanders, 2010, "The Impact of Index and Swap Funds in Commodity Futures Markets," A Technical Report Prepared for the Organization on Economic Co-Operation and Development (OECD), June.

Irwin, S. and D. Sanders, 2011, "Index Funds, Financialization, and Commodity Futures Markets," Applied Economic Perspectives and Policy, Spring, pp. 1-31.

Jacks, D., 2007, "Populists Versus Theorists: Futures Markets and the Volatility of Prices," Explorations in Economic History, Elsevier, April, pp. 342-362.

Kawamoto, T., Kimura, T., Morishita K., and M. Higashi, 2011, "What Has Caused the Surge in Global Commodity Prices and Strengthened Cross-Market Linkages?," Bank of Japan Working Paper Series, No. 11-E-3, May.

Khan, M., 2008, "Oil Prices and the GCC: Could the Region Be Stoking Oil Prices?," Citi Economic and Market Analysis, 4 July.

Lewis, M., Brebner, D., Hsueh, M., Fu, X., Sieminski, A., Choi, S., Lewis, M.-C., and I. Curien, 2011, "Commodities Weekly," Deutsche Bank Global Markets Research, 25 February.

Lewis, M., 2011, "Commodities Quarterly," Deutsche Bank Global Markets Research, 5 July, p. 55.

Loder, A. and S. Brush, 2011, "Energy Futures: The Risk in Speculation," Bloomberg BusinessWeek, 20 January. [The article cites (now retired) CFTC Commission M. Dunn.]

Lynch, S., 2010, "CFTC Documents Reveal Internal Debate on Position Limits," Wall Street Journal, 14 May.

Murti, A., Singer, B., Koh, K., and M. della Vigna, 2008, "$100 Oil Reality, Part 2: Has the Super-Spike End Game Begun?", Goldman Sachs, Global: Energy: Oil, 5 May.

Till, H. 2008a, "Amaranth Lessons Thus Far," Journal of Alternative Investments, Spring, pp. 82–98.

Till, H., 2008b, "The Oil Markets: Let the Data Speak for Itself," EDHEC-Risk Publication, October.

Till, H., 2012, "'Who Sank the Boat?' Alternative Explanations to Popular Narratives Regarding Recent Commodity Price Spikes and the Implications This Has for European Derivatives Regulation," EDHEC-Risk Publication, http://www.edhec-risk.com/edhec_publications/all_publications/RISKReview.2012-06-08.1744/attachments/EDHEC_Position_Paper_Who_Sank_the_Boat_F.pdf, June.

Till, H. and J. Eagleeye, 2004, "How to Design a Commodity Futures Trading Program," in Greg Gregoriou, Vassilios Karavas, François-Serge Lhabitant, and Fabrice Rouah (eds), Commodity Trading Advisors: Risk, Performance Analysis, and Selection, Hoboken, NJ: Wiley, pp. 277–93.

Till, H. and J. Eagleeye, 2006, "Commodities – Active Strategies for Enhanced Return," in Robert Greer (ed), The Handbook of Inflation Hedging Investments, New York: McGraw Hill; also in Journal of Wealth Management, Fall 2005, pp. 42–61.

Ward, S., 2012, "Dalio's World," Barron's, 19 May.

White, E., 2011, "Dwindling Corn Stocks Put Market on Edge," Western Producer (a publication serving Western Canadian farm families), 17 February.

Williams, S., Fenn, D., and M. McDonald, 2012, "Risk On – Risk Off," HSBC Global Research, April.

Wright, B., 2011a, "The Economics of Grain Price Volatility," Applied Economic Perspectives and Policy, Spring, pp. 32-58.

Wright, B., 2011b, "The Economics of Grain Price Volatility," Plenary Address at 14th Annual Conference on Global Economic Analysis," Slides, Venice, 16 June.

Wright, B., 2011c, "On the Economics of Grain Price Volatility," CFTC Conference on Commodity Markets, Washington, D.C., Transcription of Remarks, 26 August.

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Additional reading on Commodities and Commodity Investment can be found in the newly updated CAIA Level II book

K. Black, D. Chambers, and H. Kazemi., Editors, CAIA Level II: Advanced Core Topics in Alternative Investments, 2nd ed. CAIA Knowledge Series. Hoboken, NJ: Wiley, 2012

Find on Amazon or Barnes and Noble

Additional Reading on Commodity Speculation

Defining Speculation: The First Step toward a Rational Dialogue

Edward Szado

The Journal of Alternative Investments, Summer 2011, Vol. 14, No. 1: pp. 75-82

The meaning attributed to a particular financial term can have a significant impact on the way one considers issues in the marketplace. The purpose of this article is to offer one perspective on how to properly define speculation and to offer a broad view of how and why different understandings of the term have led to the debate as to how, and to what degree, to control the activities of speculators. For instance, the view of what constitutes speculation and its impact on market processes varies widely among academics, politicians, the media, and the general public. Academics generally view speculators as a group of individuals who trade primarily based on an individual asset's stand alone, expected risk–reward trade-off. In contrast, in the public, the mass media, and the political arena, speculators are often considered less important or less noble than other market participants who trade financial futures or commodities only as an indirect (e.g., hedging) part of their ordinary business activities. Whatever the separation between hedging and speculation, the primary concern is the degree to which either hedgers or speculators have direct influence on market prices above and beyond their primary market functions.

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The Role of Speculators During Times of Financial Distress

Naomi E. Boyd, Jeffrey H. Harris, and Arkadiusz Nowak

The Journal of Alternative Investments, Summer 2011, Vol. 14, No. 1: pp. 10-25

One of the best-known and largest hedge fund failures was the 2006 failure of Amaranth Advisors, LLC. The authors use detailed, trader-level data to examine the role of speculators during times of financial distress—in this case, the failure of Amaranth. They find that speculators served as a stabilizing force during the period by maintaining or increasing long positions, even while prices fell. The authors develop two testable propositions regarding liquidation versus transfer of positions and conclude that the probability of transfer was more likely for distant contract expirations and for contracts more dominantly held by the distressed trader. The article also examines the role of speculators in providing liquidity and mitigating the effects of liquidity risk by evaluating the change in the number of traders, the size and time between trades, and a Herfindahl measure of speculative trader concentration during the crisis period.

http://www.iijournals.com/doi/abs/10.3905/jai.2011.14.1.010

Squeeze Play: The Dynamics of the Manipulation End Game

The Journal of Alternative Investments, Summer 2011, Vol. 14, No. 1: pp. 26-39

Craig Pirrong

This article considers one of the most significant regulatory concerns facing derivatives markets: the case of market manipulation by means of a corner, or "squeeze." There are many famous examples of squeezes dating back to the very origins of derivatives trading and extending to the present day. These manipulations distort prices by moving them away from the supply- and demand-driven equilibrium, which limits the effectiveness of the market as a venue for price discovery and effective hedging. Unfortunately, the dynamics of trading as a contract nears expiration have not been modeled extensively. As a result, the existing literature cannot capture many of the interesting actions and interactions observed during actual squeezes. This article fills that void by examining the effects of asymmetrical information on the trading strategies of large longs and shorts as a contract approaches expiration. It provides insight into the mechanism of real-world corners and squeezes and the associated price movements around expiration that are not driven by supply and demand.

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Examining the Role of Financial Investors and Speculation in Oil Markets

Denis Babusiaux, Axel Pierru, and Frédéric Lasserre

The Journal of Alternative Investments, Summer 2011, Vol. 14, No. 1: pp. 61-74

Repeated oil-price spikes have generated a great deal of controversy about the role played by speculation in derivatives markets. A number of analysts have suggested that the speculative positions of financial investors played a major part in the 2008 oil-price hike. In contrast, some economists claim that oil inventories did not increase sufficiently for speculation to be the cause of the run up in oil prices. This article presents these two apparently contradictory arguments and attempts to reconcile them by emphasizing the inertia of the world oil–demand response to price variations. The authors present a number of factors that help reconcile these beliefs, including incomplete oil inventory statistics, increased ground storage, the use of inventories for current production, and the impact of a "focal price" that is inconsistent with the immediate market fundamentals.

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The Impact of Index Funds in Commodity Futures Markets: A Systems Approach

Dwight R. Sanders and Scott H. Irwin

The Journal of Alternative Investments, Summer 2011, Vol. 14, No. 1: pp. 40-49

This article addresses the debate regarding the role of index funds in commodity futures markets. Many have argued that index funds are speculators that are responsible for bubbles in commodity futures prices. The argument is based on the premise that the sheer size of index investment can overwhelm the normal functioning of these markets. Importantly, an empirical linkage must be made between commodity index fund positions and prices, or there is no obvious mechanism by which a bubble can form. The authors' empirical analysis uses new data from the U.S. Commodity Futures Trading Commission contained in the "Disaggregated Commitments of Traders" report. Grangerstyle causality regressions provide no convincing evidence that positions held by swap dealers impact market returns. Surprisingly, the results do suggest that larger commodity index positions are associated with declining market volatility, although these results may be market specific.

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Commodity Index Investing: Speculation or Diversification?

Hans R. Stoll and Robert E. Whaley

The Journal of Alternative Investments, Summer 2011, Vol. 14, No. 1: pp. 50-60

A number of seemingly unrelated commodities experienced simultaneous price spikes in 2007 and 2008. Congress investigated the increase in prices and concluded that the price increases were attributable not to supply and demand fundamentals but rather excessive speculation from commodity index investing. In this article, the authors evaluate whether commodity index investing is a disruptive force in commodity futures markets. Using the U.S. Commodity Futures Trading Commission's Commitments of Traders reports, the authors conclude that because of its passive, long-only nature, commodity index investing is not speculation. In addition, the authors conclude that commodity index flows, whether due to rolling over existing futures positions or establishing new ones, have little impact on futures prices.

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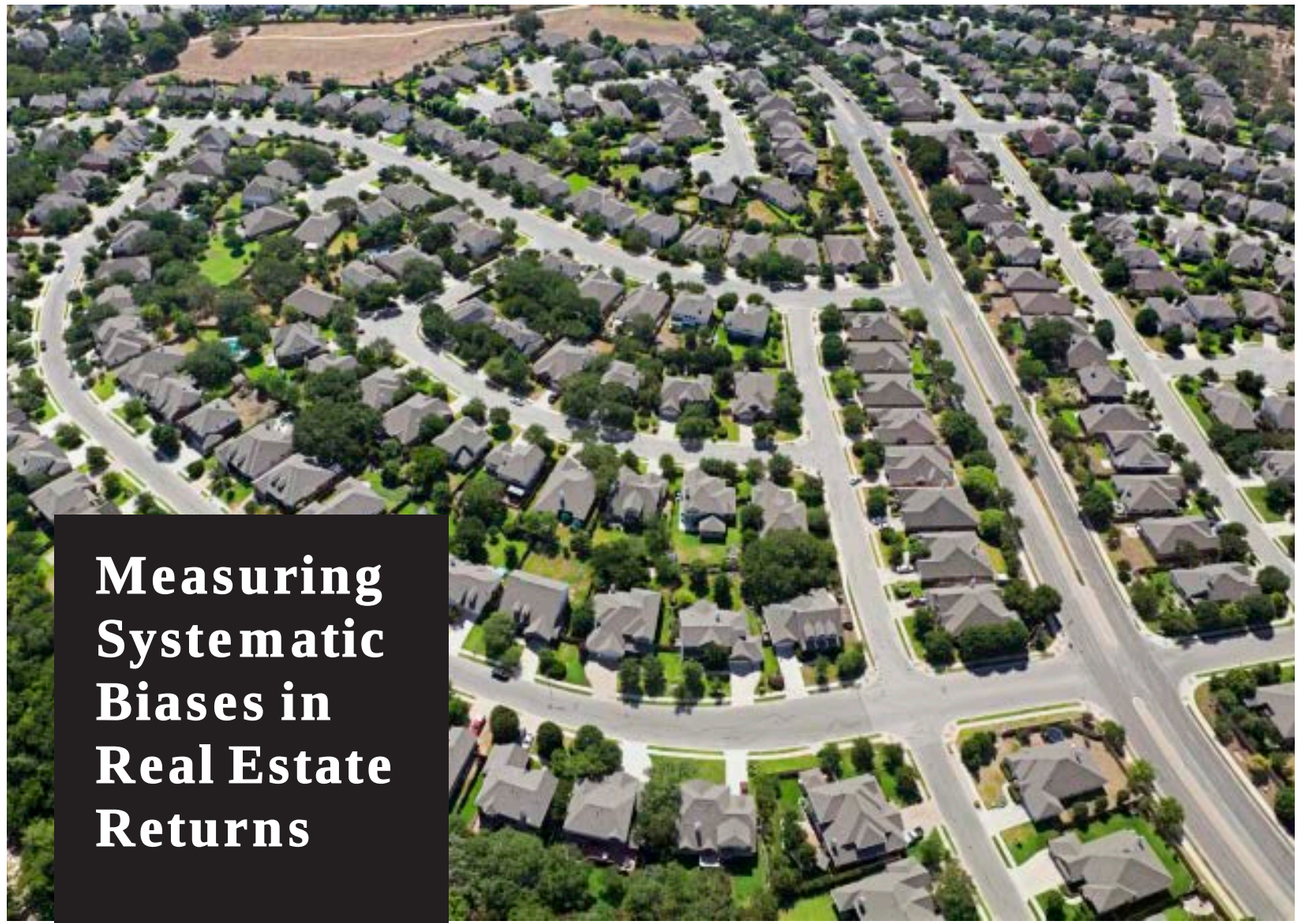

Measuring Systematic Biases in Real Estate Returns

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Real Estate is generally considered one of the least liquid asset classes. The are several reasons for the lack of liquidity: the unique nature of each property, the lack of a publicly traded market, the appraisal nature of valuing assets, and the large "chunky" size of each asset. The lack of liquidity has several implications for measuring the risk and performance of real estate.

Publicly traded financial markets are often assumed to be efficient in the sense that there are no asymmetries of information among the market participants. However, this assumption does not apply to the real estate markets where information is costly to acquire and a competitive edge can be gained through in-depth research.

This problem becomes particularly acute with respect to performance measurement. The benchmark chosen to measure the performance of a real estate manager is an important consideration in the assessment of that manager as well as the allocation of capital to that manager. Performance assessment is also important for determining whether a real estate manager can produce alpha or excess returns, and this feeds into the calculation of incentive fees.

More broadly, determining the amount of systematic market risk embedded in real estate portfolios is a key factor in the asset allocation decision for institutional investors. In the risk budgeting process, it is important to have as accurate a measure as possible of the systematic market (or beta) risk associated with every asset class in order to obtain the best diversified portfolio. However, with illiquid asset classes such as real estate, obtaining an accurate measure of the embedded market risk can be difficult.

In this paper, we present a method for measuring the amount of systematic risk in real estate portfolios relative to well recognized market indices. We begin by describing the problem associated with measuring real estate performance. We then measure the sensitivity of the returns to real estate compared to public market indices using an extended market model. We also examine a behavioral element associated with real estate portfolios to determine if there is a systematic bias in the way that real estate managers mark their portfolio holdings. Last, we examine real estate returns to see if there is any seasonal bias in determining valuations.

2. The Problem

The problem with real estate is that there is no "semi-strong" notion of market efficiency where the price of an underlying property reflects all publicly available information. Real estate trades in private transactions. This is in contrast to efficient capital markets which require a liquid trading facility—a stock exchange, an ECN, or some other electronic platform—to allow for transactions to occur that will incorporate the available market information.

Without publicly traded asset prices, real estate managers and investors have to rely on other methods to determine fair value. The most common method to determine fair value is the appraisal approach that relies on prior sales of comparable properties. Using data points obtained from prior sales of similar real estate properties is a standard method to establish the fair value of a real estate property.

However, appraisals tend to lag the current market because they are based on asset sales that occurred in the past, not the present. This lagging can lead to non-synchronous price changes given the movement

of the overall financial markets. This is sometimes referred to as stale pricing—that is, the value of a real estate asset may not be "fresh" in the sense that the marked price of the asset may not reflect its current value. Stale pricing can result in underestimating the measure of systematic/market/beta risk associated with real estate assets.

Alternatively, real estate values may be established based on a cash flow analysis using the existing rents contained in the current lease agreements for the property. However, this method also has its "stale effect" because the leases associated with a property may have been negotiated several years in arrears and do not reflect the current state of the rental market.

Last, we need to consider a behavioral element that might be embedded in real estate valuations. Appraisal data is subject to a significant level of estimation and judgment on behalf of the appraiser. As a result it is possible that behavioral biases might creep into the pricing of real estate portfolios. We explore this element in this paper. We, also examine whether there is a seasonal effect in the pricing of real estate portfolios. It is possible that real estate values are subject to an annual rather than behavioral bias.

3. Adjusting Real Estate Returns for Market Exposure

3.1. Contemporaneous Regression Analysis

Real Estate is considered a diversifying asset class from stocks and bonds, but it is not immune from the systematic movements of the broad financial markets. While real estate does not derive all of its return from the up and down movement of the public financial markets, measuring the systematic risk embedded within real estate returns is important for two reasons. First, knowledge of the amount of beta embedded within real estate returns can help separate the return due to market exposure from that earned through the real estate manager's skill. Second, accurate measurement of the amount of beta risk embedded within real estate returns is useful for risk budgeting and asset allocation across an investor's total portfolio.

To separate out the systematic movements of the financial markets, the solution most often pursued is to regress the historical returns from real estate investments on the concurrent returns of a broad-based market index such as the MSCI All Country World Index (ACWI) or the Russell 1000. This gives a measure of the beta or sensitivity of real estate returns to the stock and bond markets.

The regression equation typically takes the form of:

$$R_{i,t}(RE) = \alpha + \beta R_{m,t} + \varepsilon_{i,t} \quad (1)$$

Where:

$R_{i,t}(RE)$ is the return to real estate at time t

$R_{m,t}$ is the return on a broad-based market index at time t

β is a measure of the systematic exposure of real estate returns to the broad-based market index

$\varepsilon_{i,t}$ is a residual term which measures the variation of real estate returns that are not explained by movements in the broad-based market index or the real estate manager's skill

a is the return due to the real estate manager's skill

This is a simple one-factor regression model. Equation 1 can be turned around to produce:

$$R_{i,t}(RE) - \beta R_{m,t} = \alpha + \varepsilon_{i,t} \quad (2)$$

Equation 2 is the risk-adjusted formula for real estate returns. It separates the returns from real estate into two components: market (beta) returns and excess returns which can be a measure of manager skill. Equation 2 can be further refined by subtracting the return earned from investing in U.S. Treasury bills from the left hand side of the equation. Real estate returns should at least be able to outperform a cash rate of return—if not then there would be no demand to invest capital in this risky asset class.

Equation 2 can be expressed as:

$$\left[R_{i,t}(RE) - Tbill\right] - \beta\left[R_{m,t} - Tbill\right] = \alpha + \varepsilon_{i,t} \quad (3)$$

where

$\left[R_{i,t}(RE) - Tbill\right]$ represents the net of fees return earned by real estate in excess of a cash rate of return;

$\left[R_{m,t} - Tbill\right]$ represents the return on the market index in excess of the cash rate of return;

a is the risk-adjusted excess return earned by the real estate manager; and

$\varepsilon_{i,t}$ is an indication of residual effects that are not explained by the data; it indicates random noise in the data.

Equation 3 can be used as a performance measure for real estate. First, the term β (beta) is a measure of the systematic risk of the real estate portfolio in relation to the market index. A value of beta greater than one indicates a real estate portfolio that has greater sensitivity to the movements of the overall stock market than a diversified basket of stocks. Conversely, a beta value less than one indicates a portfolio that has less sensitivity to the movements of the overall stock market.

The term a (alpha) is the intercept of the equation and it measures the return earned by the real estate portfolio after taking into account the effects of the broad stock or bond market and the current cash rate of return. The intercept represents the excess risk-adjusted return earned by the real estate manager over and above that for the market return and a cash return. This term represents the skill of the real estate manager.[i]

Notice that Equation 3 contains two residual terms, alpha and epsilon (ε). Epsilon represents random noise in the data: in other words it is not attributed to manager skill. So how do we know whether the residual term is alpha or epsilon? This is where statistics come into play. If the residual term is statistically significant from zero, then this is a demonstration of a consistent economic effect, i.e., alpha or manager skill. However, if the residual term is not statistically significant, then this is an indication of only random noise—ε—and not manager skill.

Another problem is that the returns from the NCREIF Property Index (NPI) obscure the actual or "true" real estate return. To extract the true returns, an unsmoothing procedure must be used. The simplest is a first-order autoregressive reverse filter. Equation 4 provides the unsmoothed capital growth rates for direct real estate investment. This method looks at the NPI return as a combination of the current true real estate return and a lagged component for the prior index value:

$$NPI_T = (1-a) \times (\text{True RE Returns}) + a \times NPI_{T-1} \quad (4)$$

The above equation says that the current NPI index return is equal to a component of the true underlying real estate return plus a component from the NPI return of the prior period. An autoregressive process with more than one lag provides a more generalized model. This allows for a more extensive lagging effect typically associated with illiquid asset classes.

$$NPI_T = (1-a-b)\times(\text{True RE Returns}) + a\times NPI_{T-1} + b\times NPI_{T-2} \qquad (5)$$

We can re-arrange Equation 5 to get an estimate of the True RE return:[ii]

$$\text{True Return} = \left(NPI_T - a\times NPI_{T-1} - b\times NPI_{T-2}\right)/(1-a-b) \qquad (6)$$

3.2. Multi-Period Regression Analysis

We discussed above that the returns to real estate investing may lag that of the public securities markets. This means that examining real estate returns based on contemporaneous market returns may not fully reveal the extent to which real estate returns depend upon the returns to the broad stock or bond market. Therefore, the simple one period regression models we performed above may not provide accurate estimates of the systematic risk of real estate returns as measured by β or the risk-adjusted excess return as measured by a, the regression intercept.

In fact, the estimates of beta may be biased downwards while the estimates of alpha may be biased upwards because real estate pricing may not occur contemporaneously with changes in the public securities markets. This lack of non-synchronous pricing might then be embedded in the alpha intercept. This would inflate the alpha coefficient to a greater extent that we might observe if we could capture these lagged pricing effects. In other words, what we label skill by the real estate manager as measured by the alpha intercept in the single period regressions might, in fact, reflect the delayed impact of systematic market risk instead of manager skill. To solve the problem of stale pricing, Equation 1 can be expanded to include multi-period pricing effects:[iii]

$$R_{i,t}(RE) = \alpha + \beta_0 R_{m,t} + \beta_1 R_{m,t-1} + \beta_2 R_{m,t-2} + \beta_3 R_{m,t-3} + \ldots + \varepsilon_{i,t} \qquad (7)$$

Equation 7 represents a model where the returns to real estate in period t are regressed against the contemporaneous returns to the market as well as the lagged returns to the market from prior periods t – 1, t – 2, t – 3, and so forth. Equation 7 is a "multi-period" extension of regression Equation 1. In Equation 7, we use the real returns unsmoothed from the NPI as described in Equation 6.

If the returns to real estate are due to stale valuation methods, we should see a significant influence from prior market returns. That is, stale or managed pricing may result in a delay between the time that changes in the value of the broad securities market are observed and the time when these changes in value are reflected in the returns to real estate portfolios. By including prior market returns in our regression equation, we can observe the non-synchronous or delayed market effects on real estate returns.

In Equation 7, the summed beta of β0 + β1 + β2 + β3 + …, provides a more accurate measure of how the returns to real estate co-vary with the public securities market. The reason we can do this is that beta coefficients are linearly additive. In other words, by summing the regression coefficients for both contemporaneous and lagged market effects we can obtain a better measure of the systematic risk associated with real estate. In addition, by taking into account both contemporaneous and lagged stock/bond market effects, we should also obtain a better estimate of alpha, the measure of excess returns associated with the real estate market.

With respect to Equation 7, we can perform the same transformations to achieve the same risk-adjusted return (in excess of a cash rate) demonstrated in Equation 3. Equation 8 presents this transformation.

$$\begin{aligned}\alpha + \varepsilon_{i,t} = &\left[R_{i,t}(RE) - Tbill\right] - \beta_0\left[R_{m,t} - Tbill\right] - \beta_1\left[R_{m,t-1} - Tbill\right] \\ &- \beta_2\left[R_{m,t-2} - Tbill\right] - \beta_3\left[R_{m,t-3} - Tbill\right]\end{aligned} \qquad (8)$$

We regress the returns to real estate on the contemporaneous market return as well as the market return for the several prior quarters. We include as many beta coefficients as are statistically significant. In this way, we can observe the full impact of the public securities markets on the returns to real estate.[iv]

3.3. Prior Research

The idea of measuring the systematic risk of illiquid asset classes with lagged market returns is not new. Anson (2002, 2007) demonstrates a significant lagged beta effect associated with private equity portfolios. He finds up to four quarters of market returns are significant in measuring the amount of systematic risk embedded in private equity portfolios. When summing across lagged betas, Anson finds that the systematic risk component of leveraged buyouts, venture capital, and mezzanine finance is approximately double the estimate of market exposure using a one-period model. At the same time, the size of alpha—the measure of private equity manager skill—decreases significantly when lagged betas are included.

Anson also finds a significant and consistent behavioral element in the pricing of private equity portfolios. He splits the data into two binary sets—positive financial markets and negative financial markets. He finds that private equity managers are quick to mark down the value of their private investments during negative financial markets, but slow to mark up the value of their private investments in positive markets—demonstrating a rule of conservatism in their portfolio valuations.

Woodward (2010) finds similar results to Anson (2002, 2007); that the measure of market risk embedded in private equity portfolios is greater when including lagged betas. However, using a different database, Woodward finds significant lagged betas for private equity that extend out for six quarters.[v] She also includes a correction for autocorrelation of the residuals to ensure that her beta estimates are minimum variance and unbiased.

The lagged beta effect has also been observed in hedge fund returns. Asness, Krail and Liew (2001) find that many hedge fund strategies have lagged market exposure that extends up to four months of market returns. Marcato and Key use different unsmoothing models to reveal the true real estate return. They find that different autoregressive unsmoothing techniques lead to different asset allocation results for real estate in a diversified portfolio.

Last, Stefek and Suryanarayanan (2012) examine the link between public market real estate returns and private market real estate. They focus on the UK real estate market and use the performance of Real Estate Investment Trusts (REITs) as a public measure of real estate returns and the IPD UK All Property Index for private market returns. They use a lagging model and find that private real estate returns are more strongly related to lagged public REIT returns than current REIT returns.

CAIA Member Contribution

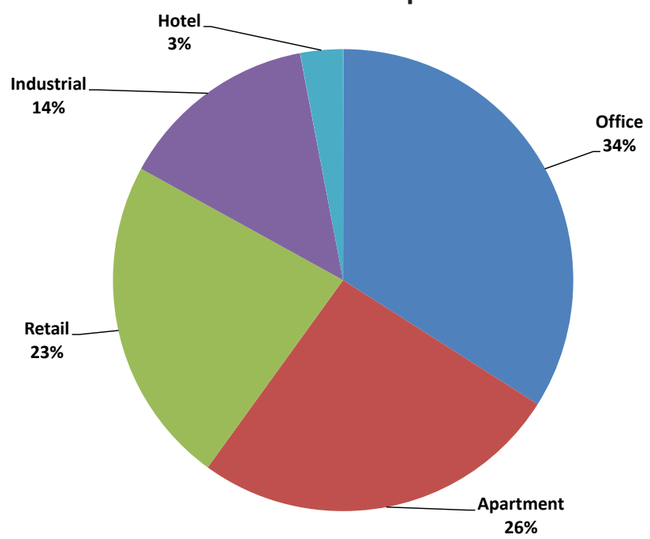
4. Empirical Results

4.1. Contemporaneous Beta Models

We first use a single-period model to measure the systematic market risk embedded in Real Estate Returns. As the dependent variable we use the NCREIF (National Council of Real Estate Investment Fiduciaries) Property Index (NPI). One requirement for NCREIF membership is that its members share their information on their real estate portfolios. Every quarter, members of NCREIF submit their data about their real estate properties that they own to support the NPI. NCREIF aggregates this information from its members on an extremely confidential basis and builds indices based on the member data. It then publishes these indices for use by its members and the real estate industry.

The NPI is a proxy for the performance of direct investments in real property. Specifically, the NPI provides the total return for an institutional grade real estate portfolio held by large US investors. Real estate properties are typically managed by investment fiduciaries on behalf of large institutional investors in the US such as endowments, foundations, pension funds, and high-net-worth investors. As of 2011, the NPI had almost 6,500 properties and the index was worth more than $272 billion. Exhibit 1 shows the composition of the NPI.

Exhibit 1: NPI Composition



Because the turnover of real estate properties is infrequent, the NPI is based on appraised values, rather than market transactions. Appraised values can be based on comparable sales of similar properties, or on a discounted cash flow method. Both of these methods have lagging problems. First, comparable sales are market transactions that occurred in the past and their values are used to appraise real estate in the present. Second, the cash flow analysis is based on leases signed in the past and will not reflect the current rental market. As a result, both appraisal methods are flawed in that they are potentially tied to past market information instead of current data. This is the very root of the problem we attempt to examine—that real estate values lagged the broader financial markets in their valuations and this lagged effect leads to underestimation of their true market or beta exposure as well as an overestimation of their diversification potential.

For the independent variable, we use three broad financial market indexes: MSCI ACWI for international stock market risk, the Russell 1000 for US financial market risk, and the Blackrock Aggregate Bond index.

Exhibit 2: Single Period Models

Single Period Models					
	Value	**T Stat**	**P Value**	**R-Square**	**Correlaton**
NPI vs. MSCI ACWI					
Intercept	1.68%	6.056	0.00%	2.51%	0.158
Beta	0.043	1.36	17.70%		
NPI vs. Russell 1000					
Intercept	1.69%	6.09	0.00%	1.54%	0.124
Beta	0.037	1.15	25.00%		
NPI vs. Blackrock Agg.					
Intercept	2.40%	4.089	0.02%	1.51%	-0.123
Beta	-0.200	-0.83	41.00%		

Exhibit 2 presents the results for our single period market model. The single period betas for MSCI ACWI, Russell 1000, and the bond index are, respectively, 0.043, 0.037, and -0.200. These beta measures are weakly significant at the 18% to 41% level—certainly not strong economic statistics. In addition, the R-Square measures for each of these beta equations are low—in the range of 1.5% to 2.5%. Last, each of the alpha intercept terms is large and range from 1.68% to 2.40% and each is statistically significant at the 0.02% level.

These results indicate that there is a limited exposure to the public security markets embedded in real estate returns. When we translate the R-Square measures into correlation coefficients (MSCI ACWI: 15.8%; Russell 1000: 12.4%; Barclays Aggregate: -12.3%) we could conclude that real estate is an effective diversification tool in the asset allocation/portfolio construction process. Last, the positive and statistically significant intercept terms indicates that there is considerable excess return associated with real estate that is not accounted for by the systematic movement of the broad financial markets.

However, we remind ourselves that real estate returns are subject to delayed or lagged pricing through the appraisal process. Therefore, the contemporaneous regression of real estate returns on public market returns may not capture the full amount of systematic risk embedded in real estate returns.

4.2. Lagged Beta Models

Consequently, we turn to our multi-period regression analysis to measure the full amount of systematic risk embedded in real estate returns. Starting with MSCI ACWI, we find that there is statistically significant market risk embedded in real estate returns for six periods of data. Even Beta(-5) is significant at the 8% level (see Exhibit 3a). This indicates that real estate returns have embedded systematic market risk up to five prior quarters. When we sum the lagged betas associated with global stocks, we find that the beta of real estate is 0.57—much greater than our single period model. In addition, the R-Square of real estate returns with public equity returns is much higher in the multi-period model—37%. Last, the alpha intercept term declines significantly—down to 0.96% per quarter, although it is still statistically significant.

We also examine the last decade splitting the time period into two sub-periods. The first half of the last decade, 2000-2005 was associated with the build-up of the housing and real estate bubble. We would expect to see less correlation and systematic risk from an asset class that is experiencing a valuation bubble. Generally, a "bubble" describes the state of the world where one asset class becomes disconnected with the fundamentals of the underlying economy and from the valuations of other asset classes that remain grounded in economic reality. However, after the housing bubble burst in 2006, we would expect to see the systematic risk of the real estate market to be more transparent as it would reflect the same economic fundamentals that affect the broad financial markets.

Exhibit 3a supports this hypothesis. The total beta for MSCI ACWI during the period 2000-2005 is only 0.23 with an R-Square of 45%. For the period of 2006-2011, the total beta is 0.97 with an R-Square of 90%. It is clear from this analysis that there is a significant systematic market risk embedded in real estate returns, and this lagged effect extends for up to six quarters. When the real estate markets are affected by the common macroeconomic conditions as other asset classes, the lagged systematic risk is considerable.

We find similar results when we use the Russell 1000 as our proxy for market returns (see Exhibit 3b). Once again, the lagging effect extends out to five quarters of market returns. There is a significant lagged beta effect for the full time period. Similar to the MSCW ACWI the lagged market risk effect is greatest after the real estate bubble. Over this time period, the lagged betas sum up to 0.84 and achieve an R-Square of 92%. However, the alpha

Exhibit 3a: Multi Period Analysis NPI vs. Lagged MSCI ACWI

NPI vs. Lagged MSCI ACWI	1990-2011			
	Coefficients	*Standard Error*	*t Stat*	*P-value*
Intercept	0.0096	0.0033	2.9423	0.42%
ACWI(0)	0.1012	0.0343	2.9462	0.42%
ACWI(-1)	0.1140	0.0344	3.3126	0.14%
ACWI(-2)	0.0937	0.0349	2.6828	0.88%
ACWI(-3)	0.1107	0.0349	3.1680	0.22%
ACWI(-4)	0.0912	0.0351	2.5993	1.11%
ACWI(-5)	0.0620	0.0350	1.7727	8.00%
Total Beta	0.573			
R-Square	37%			
Correlation Coefficient	61%			
NPI vs. Lagged MSCI ACWI	**2000-2005**			
	Coefficients	*Standard Error*	*t Stat*	*P-value*
Intercept	0.0281	0.0030	9.4514	0.00%
ACWI(0)	0.0302	0.0368	0.8227	42.21%
ACWI(-1)	0.0225	0.0339	0.6633	51.60%
ACWI(-2)	0.0428	0.0345	1.2410	23.15%
ACWI(-3)	0.0465	0.0344	1.3516	19.42%
ACWI(-4)	0.0769	0.0336	2.2902	3.51%
ACWI(-5)	0.0109	0.0335	0.3269	74.78%
Total Beta	0.230			
R-Square	45%			
Correlation Coefficient	67%			
NPI vs. Lagged MSCI ACWI	**2006-2011**			
	Coefficients	*Standard Error*	*t Stat*	*P-value*
Intercept	0.0040	0.0040	0.9878	33.71%
ACWI(0)	0.2392	0.0413	5.7943	0.00%
ACWI(-1)	0.2311	0.0440	5.2475	0.01%
ACWI(-2)	0.0414	0.0475	0.8723	39.52%
ACWI(-3)	0.2553	0.0484	5.2771	0.01%
ACWI(-4)	0.1983	0.0481	4.1229	0.07%
ACWI(-5)	0.0080	0.0442	0.1821	85.77%
Total Beta	0.973			
R-Square	90%			
Correlation Coefficient	95%			

Exhibit 3b: Multi Period Analysis NPI vs. Lagged RU10000

NPI vs. Lagged RU1000	1990-2011			
	Coefficients	*Standard Error*	*t Stat*	*P-value*
Intercept	0.0107	0.0028	3.7875	0.03%
Russell 1000 (0)	0.0320	0.0303	1.0536	29.55%
Russell 1000 (-1)	0.0613	0.0310	1.9755	5.20%
Russell 1000 (-2)	0.0690	0.0304	2.2661	2.64%
Russell 1000 (-3)	0.0682	0.0304	2.2450	2.78%
Russell 1000 (-4)	0.0763	0.0296	2.5747	1.21%
Russell 1000 (-5)	0.0616	0.0298	2.0674	4.22%
Total Beta	0.368			
R-Square	33%			
Correlation Coefficient	57%			
NPI vs. Lagged RU1000	**2000-2005**			
	Coefficients	*Standard Error*	*t Stat*	*P-value*
Intercept	0.0257	0.0020	12.8868	0.00%
Russell 1000 (0)	0.0064	0.0235	0.2731	78.76%
Russell 1000 (-1)	0.0123	0.0211	0.5842	56.56%
Russell 1000 (-2)	0.0260	0.0207	1.2589	22.25%
Russell 1000 (-3)	0.0343	0.0206	1.6606	11.24%
Russell 1000 (-4)	0.0411	0.0200	2.0538	5.33%
Russell 1000 (-5)	0.0208	0.0203	1.0237	31.82%
Total Beta	0.141			
R-Square	41%			
Correlation Coefficient	64%			
NPI vs. Lagged RU1000	**2006-2011**			
	Coefficients	*Standard Error*	*t Stat*	*P-value*
Intercept	0.0077	0.0029	2.6449	1.84%
Russell 1000 (0)	0.1154	0.0356	3.2400	0.55%
Russell 1000 (-1)	0.1515	0.0399	3.7916	0.18%
Russell 1000 (-2)	0.1014	0.0409	2.4764	2.57%
Russell 1000 (-3)	0.2063	0.0405	5.0990	0.01%
Russell 1000 (-4)	0.1624	0.0403	4.0262	0.11%
Russell 1000 (-5)	0.1018	0.0408	2.4926	2.49%
Total Beta	0.839			
R-Square	92%			
Correlaton Coefficient	96%			

Exhibit 3c: Multi Period Analysis NPI vs. Lagged Bonds

NPI vs. Lagged Bonds	1990-2011		
	Coefficients	Standard Error	t Stat
Intercept	0.0271	0.0054	5.0297
BlackRock Aggregate(0)	-0.1995	0.1404	-1.4204
BlackRock Aggregate(-1)	-0.1734	0.1404	-1.2347
BlackRock Aggregate(-2)	-0.1074	0.1396	-0.7694
BlackRock Aggregate(-3)	-0.0571	0.1393	-0.4100
Total Beta	-0.537		
R-Square	4.5%		
Correlation Coefficient	-21%		
NPI vs. Lagged Bonds	**2000-2005**		
	Coefficients	Standard Error	t Stat
Intercept	0.0278	0.0099	2.8080
BlackRock Aggregate(0)	-0.2332	0.2577	-0.9046
BlackRock Aggregate(-1)	-0.1668	0.2579	-0.6467
BlackRock Aggregate(-2)	-0.0718	0.2592	-0.2769
BlackRock Aggregate(-3)	-0.0012	0.2532	-0.0049
Total Beta	-0.473		
R-Square	1.6%		
Correlation Coefficient	-13%		
NPI vs. Lagged Bonds	**2006-2011**		
	Coefficients	Standard Error	t Stat
Intercept	0.0211	0.0230	0.9186
BlackRock Aggregate(0)	-0.3908	0.5621	-0.6952
BlackRock Aggregate(-1)	-0.1379	0.5821	-0.2369
BlackRock Aggregate(-2)	-0.0891	0.5728	-0.1555
BlackRock Aggregate(-3)	0.0525	0.5639	0.0932
Total Beta	-0.565		
R-Square	3.2%		
Correlation Coefficient	-18%		

Exhibit 3d: Multi Period Analysis NPI vs. Lagged REIT

NPI vs. Lagged REIT	1990-2011		
	Coefficients	*Standard Error*	*t Stat*
Intercept	0.0057	0.0031	1.8276
Beta(0)	0.0484	0.0239	2.0259
Beta)-1)	0.0408	0.0246	1.6614
Beta(-2)	0.0677	0.0242	2.8000
Beta(-3)	0.0550	0.0242	2.2696
Beta(-4)	0.0815	0.0238	3.4240
Beta(-5)	0.0530	0.0239	2.2202
Beta(-6)	0.0505	0.0235	2.1463
Total Beta	0.397		
R-Square	37%		
NPI vs. Lagged REIT	**2000-2005**		
	Coefficients	*Standard Error*	*t Stat*
Intercept	0.0163	0.0060	2.7056
Beta(0)	0.0635	0.0428	1.4846
Beta(-1)	0.0404	0.0420	0.9626
Beta(-2)	0.0473	0.0384	1.2298
Beta(-3)	0.0319	0.0397	0.8037
Beta(-4)	0.0507	0.0401	1.2643
Beta(-5)	0.0224	0.0414	0.5419
Beta(-6)	0.0009	0.0380	0.0240
Total Beta	0.257		
R-Square	23%		
NPI vs. Lagged REIT	**2006-2011**		
	Coefficients	*Standard Error*	*t Stat*
Intercept	-0.0015	0.0045	-0.3317
Beta(0)	0.0754	0.0282	2.6741
Beta(-1)	0.0687	0.0301	2.2795
Beta(-2)	0.0912	0.0312	2.9200
Beta(-3)	0.1083	0.0302	3.5865
Beta(-4)	0.1142	0.0294	3.8816
Beta(-5)	0.0574	0.0284	2.0227
Beta(-6)	0.0725	0.0276	2.6239
Total Beta	0.588		
R-Square	83%		

intercept during this last period of 0.77% remains statistically significant at 2%.

For the bond index, we don't find any of the lagged betas to be significant (at 10%) over any time period. There is no improvement over the single-period model. This is further supported by the fact that there is almost no change in the correlation coefficient between the single-and multi-period model and the R-Square measure is no higher than 4.5% for the full time period. The only odd result is that the alpha intercept declines slightly over the 2006-2011 periods and becomes statistically insignificant. Nonetheless, our conclusion is that there is very little lagged systematic bond (duration) risk embedded in unlevered real estate returns.

4.3. Behavioral Beta Models

Our results indicate that private real estate portfolios reflect changes in the prices of marketable securities over a period of time up to five quaters. In other words, there is non-synchronous (lagged) pricing between private real estate portfolios and public stock market returns. We next examine whether there is a systematic behavioral bias associated with the valuation of private real estate.

The non-contemporaneous impact of market returns on private real estate portfolios could be due to the

structure of the real estate market. That is, illiquid properties which are marked by appraisal only when there are observable, but infrequent events such as comparable property sales. Alternatively, the lagged impact of market returns on real estate portfolios could be due to real estate managers who actively manage the pricing of their portfolios. It is possible that property managers mark the value of their portfolios up or down when it is most favorable to do so. This is a behavioral aspect that can arise when there is discretion in the valuation of illiquid portfolios.

One way to detect a behavioral bias is to divide the world up into two mutually exclusive states—Up Markets and Down Markets. We accomplish this division using a dummy variable.

A dummy variable is a way to split the world into two distinct states. In State One, the public securities market performs well (Up Markets). In State Two, the public market performs poorly (Down Markets). Dummy variables are often referred to as binary variables because of the way they divide the world into two separate categories. Dummy variables are often multiplied against the independent variables in the regression equation to capture this binary view of the world. Our new equation looks like this:

$$R_{it}\left(RE\right) - Tbill = \alpha + D \times \sum_{j=0} \beta_j \left[R_{m,t-j} - Tbill \right] + \varepsilon_{i,t} \qquad (9)$$

Exhibit 4a: ACWI and Dummy Variables 1990-2011

ACWI Up Markets **1990-2011**
SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.423
R Square	0.179
Adjusted R Square	0.113
Standard Error	0.033
Observations	82.000

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	6.000	0.018	0.003	2.719	0.019
Residual	75.000	0.082	0.001		
Total	81.000	0.100			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*
Intercept	-0.009	0.008	-1.093	0.278	-0.026
ACWI (0)	0.073	0.070	1.039	0.302	-0.067
ACWI (-1)	0.054	0.070	0.775	0.441	-0.085
ACWI (-2)	0.158	0.070	2.274	0.026	0.020
ACWI (-3)	0.137	0.070	1.967	0.053	-0.002
ACWI (-4)	0.172	0.069	2.485	0.015	0.034
ACWI (-5)	0.099	0.069	1.424	0.159	-0.039
Total Beta	0.693				

ACWI Down Markets **1990-2011**
SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.634
R Square	0.401
Adjusted R Square	0.344
Standard Error	0.021
Observations	81.000

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	7.000	0.022	0.003	6.991	0.000
Residual	73.000	0.032	0.000		
Total	80.000	0.054			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*
Intercept	0.032	0.003	10.098	0.000	0.026
ACWI (0)	0.092	0.052	1.785	0.078	-0.011
ACWI (-1)	0.134	0.052	2.554	0.013	0.029
ACWI (-2)	0.087	0.052	1.676	0.098	-0.017
ACWI (-3)	0.113	0.052	2.195	0.031	0.010
ACWI (-4)	0.073	0.048	1.509	0.136	-0.023
ACWI (-5)	0.089	0.047	1.881	0.064	-0.005
Total Beta	0.589				

Exhibit 4b: ACWI and Dummy Variables 2004-2011

ACWI UP Markets **2004-2011**
SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.530
R Square	0.281
Adjusted R Square	0.060
Standard Error	0.034
Observations	31.000

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	7.000	0.011	0.002	1.563	0.196
Residual	24.000	0.028	0.001		
Total	31.000	0.039			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*
Intercept	-0.006	0.014	-0.455	0.653	-0.035
ACWI (0)	-0.010	0.055	-0.182	0.856	-0.120
ACWI (-1)	0.025	0.116	0.212	0.834	-0.215
ACWI (-2)	0.109	0.117	0.935	0.359	-0.132
ACWI (-3)	-0.080	0.119	-0.672	0.508	-0.326
ACWI (-4)	0.204	0.105	1.944	0.064	-0.013
ACWI (-5)	0.178	0.109	1.637	0.115	-0.046
Total Beta	0.426				

ACWI Down Markets **2004-2011**
SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.963
R Square	0.927
Adjusted R Square	0.905
Standard Error	0.011
Observations	31.000

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	7.000	0.036	0.005	41.745	0.000
Residual	23.000	0.003	0.000		
Total	30.000	0.039			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*
Intercept	0.046	0.003	16.984	0.000	0.040
ACWI (0)	0.214	0.042	5.096	0.000	0.127
ACWI (-1)	0.268	0.048	5.623	0.000	0.170
ACWI (-2)	0.073	0.048	1.535	0.138	-0.025
ACWI (-3)	0.196	0.047	4.153	0.000	0.098
ACWI (-4)	0.147	0.046	3.168	0.004	0.051
ACWI (-5)	0.096	0.044	2.198	0.038	0.006
Total Beta	0.995				

To conduct this analysis, we run Equation 9 twice. In the first analysis, we set the dummy variable (D) equal to 1 when the public stock market performs positively, and 0 when the stock market performs negatively. We then calculate the size of the lagged betas. In the second analysis, we set the dummy variable equal to 1 when the public stock market performs negatively and 0 when the markets perform positively. Again we calculate the sum of the lagged betas.

If there is no behavioral bias in the pricing of real estate portfolios, then we would expect to see equivalent values of alphas and betas in both Up and Down markets. However, if there is a behavioral aspect of pricing real estate portfolios, the values would be different, indicating a bias to marking the real estate portfolio depending on whether the public markets were increasing or decreasing.

There are several reasons why real estate managers might be slower to mark down the value of their real estate portfolios in poor economic times and faster to mark them up in good economic times. It might be in their economic interest to pursue this form of managed pricing based on profit sharing incentives. In addition, real estate managers may not want to feel "left out" by stock market rallies—increasing the value of their portfolios more consistently when the financial markets perform well than when the financial markets perform poorly. Alternatively, real estate managers might want to mark up their values more quickly to take advantage of higher future sales prices, or stronger portfolio balance sheets. In sum, there are many motivating reasons why real estate managers might be more aggressive in marking up their assets and slower to mark them down in value. If this behavioral aspect is at work then we would expect the lagged betas to have less explanatory power in Up Markets. Conversely, in Down Markets, real estate managers might be slower to mark down the value of their real estate portfolios and might be more active in stretching out the effect of lower economic valuations. Therefore, in Down Markets we would expect to observe a larger explanatory power associated with lagged betas.

Our results are presented in Exhibit 4a and Exhibit 4b, which reflect two time periods—the full 21-year period and the last decade, respectively. Using the MSCI ACWI benchmark, over the full period, the total lagged beta in Up Markets is 0.69 versus 0.59 in Down Markets (see Exhibit 4a). Contrary to our hypothesis, these initial results would seem to indicate that real estate managers are slower to mark up their portfolios in Up Markets.

However, when we look at the results more closely we see that the R-Square measure for Up Markets is only 18% while it is 40% in Down Markets. This indicates that the lagged explanatory market variables have more explanatory power in Down Markets than Up Markets, consistent with our hypothesis. In addition, when we add up only those lagged beta variables that are statistically significant (p-values greater than 10%), we find that the Down Market Betas have more explanatory power than Up Market Betas—0.52 for Down Markets vs. 0.47 for Up Markets.

In addition, we observe a behavioral bias in the alpha intercepts. For the full period in Up Markets, the alpha is -0.09% while in Down Markets, the alpha is a positive 3.2%--another demonstration of the asymmetry in pricing in Up vs. Down Markets.

The results are more pronounced when we consider the last decade (see Exhibit 4b). Now the total lagged beta for Down Markets is 0.995 vs. 0.426 for Up Markets. In addition, the R-Square for Down Markets is 93% vs. 28% for Up Markets. Last, the alpha intercepts also display this behavioral asymmetry: -0.06% in Up Markets vs. 4.6% in Down Markets.

These results support a consistent behavioral bias in the real estate markets. There is a clear predilection to price real estate portfolios relative to the public equity market much more slowly in Down Markets than in Up Markets. This is consistent with a desire by real estate managers to share more quickly in the tailwinds associated with positive results in the public equity markets.

Exhibit 5a and Exhibit 5b demonstrate similar results using the Russell 1000 benchmark. For the full period, in Up Markets, the total lagged beta is 0.35 vs. 0.55 in Down Markets and the R-Square is only 17% in Up Markets vs. 31% in down markets. For the last decade, the total lagged beta increases significantly in Down Markets—1.08 vs. 0.51 in Up Markets. The R-Square is also much higher in Down Markets—90% vs. 33% in Up Markets.

Last, reviewing the alpha estimates, we find results similar to those for the MSCI ACWI regressions. The alpha intercept is negative in Up Markets, but very large and positive in Down Markets. This is another demonstration of a behavioral asymmetry.

Our conclusion is that there is considerable asymmetry in the pricing in real estate portfolios. Specifically, there is a consistent bias by real estate managers to increase the value of their property values quickly when the public securities markets are performing well compared to when the public securities markets are performing poorly. This could very well be due to the economics of real estate management, an attempt to mark up values more quickly for future sales, or simply a desire by real estate managers to take credit sooner when the overall securities markets are performing well.

Another way to consider this issue is to review the alpha intercepts. Using both the MSCI ACWI and the Russell 1000 we found the alpha intercept to be negative in Up Markets and positive and very large in Down Markets. Is it reasonable to believe that real estate managers provide no excess return in Up Markets, but suddenly turn into star performers with significant alpha in Down Markets? We suspect that the answer is more about behavior and less about stardom. The truth lies somewhere in between, as demonstrated by the alphas in Exhibits 3a-3d.

4.4. Seasonal Beta Models

Another element to the lagged nature of appraisal-based valuations is that there can be a seasonal effect.[vi] It is possible that a greater emphasis is put on year-end appraisals than during the other quarters of the year. To test this theory we go back to Equation 9. This time we set the Dummy Variable equal to 1 for observed valuations at the end of the fourth quarter every year and 0 for every other quarter.[vii]

Exhibits 6 and 7 display our results. Compared to our initial lagged results, there is a much higher systematic beta component associated with year-end real estate values. For example, using the MSCI ACWI, Exhibit 6 shows a total lagged beta of 0.79 across the entire time period with an R-Square of 39%. Compare this with the results in Exhibit 3a where the lagged beta for MSCI ACWI was 0.57 and the R-Square was 37%. Interestingly, the alpha intercept does not change very much—1.1% in Exhibit 6 vs. 0.96% in Exhibit 3a. This indicates a seasonal bias to pricing real estate portfolios that captures more systematic risk than interim quarters.

When we look at the time period post the real estate bubble, the results are even more dramatic. The beta estimate for MSCI ACWI increases to 1.51 with an R-Square of 94%. Although, again, we find an increased alpha intercept for this time period in Exhibit 6 compared to Exhibit 3a.

Exhibit 7 confirms the patterns with similar results when using the Russell 1000. There are higher lagged beta estimates associated with December appraisals for both the full time period and for the post bubble period.

Exhibit 5a: Russell 1000 and Dummy Variables 1990-2011

Russell 1000: 1990-2011 UP MKT

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.412
R Square	0.170
Adjusted R Square	0.090
Standard Error	0.025
Observations	81.000

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	7.000	0.009	0.001	2.133	0.051
Residual	73.000	0.045	0.001		
Total	80.000	0.054			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*
Intercept	-0.001	0.007	-0.102	0.919	-0.014
Russell 1000 (0)	-0.026	0.056	-0.455	0.650	-0.137
Russell 1000 (-1)	0.025	0.056	0.448	0.656	-0.086
Russell 1000 (-2)	0.078	0.055	1.422	0.159	-0.031
Russell 1000 (-3)	0.069	0.055	1.264	0.210	-0.040
Russell 1000 (-4)	0.108	0.055	1.964	0.053	-0.002
Russell 1000 (-5)	0.099	0.055	1.792	0.077	-0.011
Total Beta	0.354				

Russell 1000: Down Mkt 1990-2011

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.560
R Square	0.314
Adjusted R Square	0.248
Standard Error	0.022
Observations	81.000

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	7.000	0.017	0.002	4.776	0.000
Residual	73.000	0.037	0.001		
Total	80.000	0.054			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*
Intercept	0.030	0.003	8.884	0.000	0.024
Russell 1000 (0)	0.082	0.054	1.515	0.134	-0.026
Russell 1000 (-1)	0.125	0.058	2.155	0.034	0.009
Russell 1000 (-2)	0.083	0.058	1.426	0.158	-0.033
Russell 1000 (-3)	0.121	0.059	2.058	0.043	0.004
Russell 1000 (-4)	0.076	0.055	1.386	0.170	-0.033
Russell 1000 (-5)	0.068	0.054	1.242	0.218	-0.041
Total Beta	0.554				

Exhibit 5b: Russell 1000 and Dummy Variables 2004-2011

Russell 1000: Up Markets 2004-2011

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.577
R Square	0.333
Adjusted R Square	0.130
Standard Error	0.034
Observations	31.000

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	7.000	0.013	0.002	1.638	0.175
Residual	23.000	0.026	0.001		
Total	30.000	0.039			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*
Intercept	-0.007	0.013	-0.568	0.576	-0.035
Russell 1000 (0)	-0.114	0.144	-0.790	0.438	-0.412
Russell 1000 (-1)	0.009	0.144	0.060	0.953	-0.290
Russell 1000 (-2)	0.077	0.142	0.544	0.592	-0.216
Russell 1000 (-3)	0.145	0.132	1.097	0.284	-0.129
Russell 1000 (-4)	0.191	0.131	1.465	0.157	-0.079
Russell 1000 (-5)	0.201	0.131	1.536	0.138	-0.070
Total Beta	0.510				

Russell 1000: Down Mkt 2004-2011

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.948
R Square	0.898
Adjusted R Square	0.867
Standard Error	0.013
Observations	31.000

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	7.000	0.035	0.005	28.893	0.000
Residual	23.000	0.004	0.000		
Total	30.000	0.039			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*
Intercept	0.049	0.003	14.582	0.000	0.042
Russell 1000 (0)	0.229	0.049	4.698	0.000	0.128
Russell 1000 (-1)	0.259	0.059	4.369	0.000	0.136
Russell 1000 (-2)	0.150	0.062	2.417	0.024	0.022
Russell 1000 (-3)	0.214	0.062	3.473	0.002	0.086
Russell 1000 (-4)	0.200	0.062	3.249	0.004	0.073
Russell 1000 (-5)	0.026	0.059	0.448	0.658	-0.095
Total Beta	1.078				

Also, while there is an increase in the alpha intercept post bubble, the alpha intercept remains constant across the full time period.

4.5. Asset Allocation Beta Models

Our last beta analysis relates to asset allocation models. Most asset allocation models use some form of mean-variance optimization to determine the optimal weights in which to blend asset classes into a total portfolio. In building a diversified portfolio, real estate is generally considered to be a good diversifying asset class with respect to public securities. But these asset allocation studies are typically designed to utilize the correlation coefficient between the current return stream of real estate and the current return stream of public market assets. As demonstrated above, a single period analysis is insufficient to determine the true relationship between the real estate markets and the public markets.

We run a simple experiment. We build an optimizer to determine the best mix of real estate when added to a traditional portfolio of stocks and bonds. In the first case, we use the one-period model to determine the level

CAIA Member Contribution

Exhibit 6: ACWI December

ACWI December Lagged 1990-2011

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.622
R Square	0.387
Adjusted R Square	0.337
Standard Error	0.021
Observations	81.000

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	6.000	0.021	0.003	7.776	0.000
Residual	74.000	0.033	0.000		
Total	80.000	0.053			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*
Intercept	0.011	0.003	4.119	0.000	0.006
X Variable 1	0.158	0.049	3.233	0.002	0.061
X Variable 2	0.155	0.049	3.158	0.002	0.057
X Variable 3	0.177	0.048	3.680	0.000	0.081
X Variable 4	0.155	0.048	3.216	0.002	0.059
X Variable 5	0.098	0.049	2.016	0.047	0.001
X Variable 6	0.049	0.049	1.002	0.319	-0.049
Total Beta	0.793				

ACWI December Lagged 2006-2011

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.967
R Square	0.939
Adjusted R Square	0.912
Standard Error	0.011
Observations	24.000

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	6.000	0.032	0.005	40.894	0.000
Residual	17.000	0.002	0.000		
Total	23.000	0.034			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*
Intercept	0.013	0.002	5.706	0.000	0.008
X Variable 1	0.351	0.042	8.348	0.000	0.262
X Variable 2	0.338	0.043	7.868	0.000	0.248
X Variable 3	0.312	0.043	7.256	0.000	0.221
X Variable 4	0.233	0.043	5.426	0.000	0.142
X Variable 5	0.193	0.043	4.471	0.000	0.102
X Variable 6	0.086	0.041	2.103	0.051	0.000
Total Beta	1.512				

Exhibit 7: Russell 1000 December

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.577
R Square	0.333
Adjusted R Square	0.279
Standard Error	0.022
Observations	81.000

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	6.000	0.018	0.003	6.166	0.000
Residual	74.000	0.036	0.000		
Total	80.000	0.053			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*
Intercept	0.010	0.003	3.590	0.001	0.005
Russell 1000 (0)	0.121	0.050	2.412	0.018	0.021
Russell 1000 (-1)	0.147	0.051	2.896	0.005	0.046
Russell 1000 (-2)	0.167	0.049	3.375	0.001	0.068
Russell 1000 (-3)	0.153	0.049	3.100	0.003	0.055
Russell 1000 (-4)	0.097	0.051	1.916	0.059	-0.004
Russell 1000 (-5)	0.054	0.051	1.052	0.296	-0.048
Total Beta	0.739				

Russell 1000 December Lag 2006-2011

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.934
R Square	0.872
Adjusted R Square	0.827
Standard Error	0.016
Observations	24.000

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	6.000	0.029	0.005	19.366	0.000
Residual	17.000	0.004	0.000		
Total	23.000	0.034			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*
Intercept	0.014	0.003	4.270	0.001	0.007
Russell 1000 (0)	0.289	0.055	5.228	0.000	0.172
Russell 1000 (-1)	0.319	0.059	5.419	0.000	0.195
Russell 1000 (-2)	0.297	0.059	5.049	0.000	0.173
Russell 1000 (-3)	0.227	0.059	3.848	0.001	0.102
Russell 1000 (-4)	0.181	0.060	3.034	0.007	0.055
Russell 1000 (-5)	0.110	0.060	1.832	0.085	-0.017
Total Beta	1.423				

Exhibit 8: Assett Allocation

	Single Period Optimum Weights	Multi-Period Optimum Weights
Real Estate	17.67%	8.68%
Public Equity	20.87%	19.45%
Bonds	61.45%	71.87%
Sum of Wts = 1	100.00%	100.00%
Risk Tolerance	0.50	0.50
Max Utility	1.74%	1.73%

of correlation between stocks, bonds and real estate. In the second case, we use the full multi-period analysis to determine the correlation of the real estate market with stocks and bonds. We place two constraints into our optimizer: 1) That the weights to stocks, bonds, and real estate be greater than or equal to zero--no shorting is allowed; and 2) That the sum of the weights allocated to stocks, bonds, and real estate be equal to one—the portfolio must be fully invested. We use a standard mean-variance utility function to conduct our analysis:[viii]

$$\text{Maximize Utility} = E\left[R_{portfolio}\right] - \frac{1}{2}\left(Risk\ Tolerance\right) \times \sigma^2_{portfolio} \qquad (10)$$

Exhibit 8 provides our results. We use estimates for risk, return and correlation for stocks, bonds and real estate over the full 1990-2011 period.[ix] The one difference between the utility optimizations is the correlation estimate of real estate with stocks and bonds. In the first optimization we use the single-period estimate of correlation between real estate and stocks and bonds. In the multi-period optimization we use the correlation estimates obtained in Exhibit 3a-3d.In the single period case, the weight to real estate is close to that of public equities at almost 17.7%. However, when the full correlation of real estate is used, the weight allocated to real estate declines by half to 8.7%. In the multi-period case, the weight of the portfolio allocated to public equities is reduced slightly compared to the single period model, because the reduced diversifying impact of real estate with public equities means that there must also be a reduction in the equity allocation. The surplus allocation flows into the bond portfolio.

This simple example demonstrates how portfolio allocation exercises can be skewed towards a much larger allocation to real estate when only a single-period market model is used. When accounting for the lagged systematic market risk embedded in real estate returns, the ability of real estate to diversify the investment portfolio diminishes significantly. Real estate still plays a significant role in the portfolio construction because it has favorable risk and return characteristics as an asset class. However, its diversification potential diminishes when a multi-period correlation estimate is used compared to stocks and bonds.

5. Conclusion

Real estate is a valuable asset class with a favorable risk and return profile. However, the value of real estate as either an alpha generator or a portfolio diversifier is potentially overstated. The reason for this is the illiquid nature of real estate that makes comparisons to contemporaneous financial market movements inappropriate.

Using a lagged beta analysis, we found that real estate is much more influenced by the publicly traded securities markets than previously thought. Using an expanded CAPM model we found that the overall beta of real estate to the public equity markets is many times greater than the single-period beta of about 0.04. Including lagged stock market returns as part of the systematic risk estimate greatly increased the sensitivity of real estate returns to the public stock markets. We found evidence that this lagging effect continues for up to five quarters of public market returns. We also found the lagged beta effect to be influenced both by real estate manager behavior and seasonality.

Concomitant with the increase in beta, we observed a decline in alpha or the excess returns derived from real estate. The decline in alpha was most noticeable when considering the behavioral aspect of lagged real estate betas—there was no measurable skill attributable to real estate managers in Up Markets, while there was large economically and statistically alpha in Down Markets.

Last, using a multi-period correlation coefficient, we found that real estate is not as large a portfolio diversifier as previously thought. This is perhaps the largest contribution of this paper as real estate has long been thought to be an ideal diversifying asset class from stocks and bonds. There is still value with real estate based on its own risk and return characteristics, but only about one half as much diversifying potential when a multi-period analysis is used.

References

Anson, Mark. "Measuring a Premium for Liquidity Risk." The Journal of Private Equity, Spring 2010, pp. 6-16.

Anson, Mark. "Performance Measurement in Private Equity: Another Look." The Journal of Private Equity, Summer 2007, pp. 7-21.

Anson, Mark. "Managed Pricing and the Rule of Conservatism in Private Equity Portfolios." The Journal of Private Equity, Spring 2002.

Asness, Clifford, Robert Krail, and John Liew. "Do Hedge Funds Hedge?" The Journal of Portfolio Management, fall 2001, pp. 6-19.

Marcato, G., and T. Key. "Smoothing and Implications for Asset Allocation Choices." The Journal of Portfolio Management, Special Real Estate Issue, 2007.

Stefek, D. and R. Suryanarayanan. "Private and Public Real Estate: What is the Link?" The Journal of Alternative Assets, Winter 2012, pp. 66-75.

Woodward, Susan. "Measuring Risk for Venture Capital and Buyout Portfolios." Sand Hill Econometrics, May 2011.

Endnotes

i. It is worth noting that this simple one factor model ignores other risk factor exposures and attributes all of the a to skill rather than additional risk exposures.

ii. In our regression analysis, we tried different values of a and b. Eventually, we settled on a = 0.3 and b = 0.2. We also tried different (a, b) pairs including (0.40, 0.1) and (0.25, 0.25) and found no material differences in our results.

iii. This method has been applied successfully to hedge funds. See Asness, Krail and Liew (2001).

iv. We note that the Treasury bill returns in Equation 5 must also be lagged to coincide with the lagged stock or bond market returns.

v. Anson (2002, 2007) used the Thomson Reuters Venture Economics database to access private equity returns while Woodward (2010) used the Cambridge Associates database.

vi. This idea was suggested to me by Dr. Mark Wolfson of the Graduate School of Business at Stanford University.

vii. We tested every quarter but only found the seasonal effect associated with December appraisals.

viii. We keep our analysis simple and ignore the higher moments of the distribution of returns (skew and kurtosis).

ix. Another problem with the real estate market is that the appraisal process can "smooth" the returns associated with real estate and this dampens the risk. We use the method of Anson (2009) to unsmooth the return stream to get a better estimate of the volatility of real estate. Also, we use the same correlation for between the NPI and the Blackrock Aggregate bond index of 0.12; our regression analysis did not show any difference between the single and multi-period models.

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Hedge Fund Seeding: A Compelling Alternative

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Overview of Hedge Fund Seeding

Many factors influence the success of a new hedge fund, including a sound investment strategy, a high-caliber team, robust operational infrastructure and qualified service providers. However, even with these qualities, there is no guarantee a fund will attract sufficient assets for survival. Most managers can't launch with a large enough asset base to cover organizational expenses and be considered credible by institutional investors. There are distinct advantages for managers who can attract substantial client assets at inception:

- Increased focus on investment performance;
- An early build-out of personnel and operational resources; and
- Ability to take a longer term business and investment approach.

Historically, barriers to entry for new hedge funds were quite low. Today, they are much higher. Investors expect greater transparency, more client service, well-known third-party service providers and high-quality back office systems and personnel. As a result, the break-even asset level is much higher.

Managers have several options at the hedge fund's inception:

- Self-fund with the expectation they will attract capital once they have a quality track record.
- Maintain a bare-bones operation, delaying new hires and support systems.
- Seek a strategic partner who provides a critical mass of capital in exchange for economic participation in the manager's business.

If structured properly, the strategic partner approach can be highly beneficial to the manager and to investors who provide the seed capital.

1.1. Seeding Relationship Benefits Managers and Investors

By providing early-stage capital, seeders are instrumental in the development of start-up hedge funds. A strategic and significant seed investment can help a start-up hedge fund attract outside capital, perhaps serving as a "stamp of approval" and validating the firm's viability. When an emerging manager has critical mass from a seeder, others are more willing to invest because they no longer represent too large a share of the manager's assets. Also, many allocators have minimum asset level requirements that make it difficult for managers below a certain AUM level (typically $50 million or $100 million) to attract new investors.

In addition to capital, seeders may offer managers strategic support in other areas, depending on the legal and economic arrangements between the seeder and the fund and/or the new manager. These may include assistance on business development, marketing, risk management and governance, as well as guidance on business issues faced by new managers. The seeder's support lets the manager focus primarily on fund performance at a critical juncture in the hedge fund's life cycle.

Seeders benefit as well. Providing early capital typically entitles seeders (both direct seeders and investors in seeding vehicles) to share in the hedge fund's revenue ("enhanced economics"). This participation can be quite profitable and takes a number of different forms, which we discuss below (see "Enhanced Economics of Hedge Fund Seeding"). Seeders can also gain other advantages such as early exposure to emerging managers, rights to future capacity, seeding rights for

future funds, full transparency, risk controls and the potential right to monetize their profit participation at a future date.

1.2. Early Exposure to Emerging Managers

A number of research studies show that emerging hedge funds have consistently outperformed more established hedge funds, both on an absolute and a risk-adjusted basis. Hedge Fund Research (HFR) found that over the 10-year period between 1994 and 2004, funds with less than a three-year track record outperformed older funds by over 5% annually, with nearly identical volatility. Outperformance was most pronounced during a fund's first two years. (On a cautionary note, that same research also found a somewhat higher mortality rate for new funds, primarily due to operational risks (HFR Asset Management, [2005])). Similarly, a 2009 study by PerTrac Financial Solutions finds that younger and smaller funds have outperformed larger and older funds over the long term (Jones, [1996-2008]). Specifically, PerTrac shows funds with less than $100 million in AUM outperformed funds with over $500 million in AUM by 377 basis points annually between 1996 and 2008, with only slightly higher volatility. During the same period, funds with less than a two-year track record outperformed funds with over a four-year track record by 562 basis points annually with lower volatility.

Neither the PerTrac study nor the HFR study made meaningful adjustments for survivorship or backfill biases. Survivorship bias occurs when funds that go out of business are excluded from an analysis. Backfill bias can occur when managers are able to retroactively report good initial performance and elect not to report poor initial performance. A 2008 study by Aggarwal and Jorion, made a number of adjustments to raw performance data to mitigate these biases. This study found returns lower than those in the PerTrac and HFR studies, but still reached the conclusion that managers generate "abnormal" performance of 2.3% during their first two years relative to later years (Aggarwal and Jorion, [2008]).

Thus, a number of independent studies have concluded that on average, emerging hedge fund managers outperform more established managers. Why? New managers may be highly motivated to outperform their peer group to attract assets and build a viable business. Emerging managers that are not too large also tend to be nimble. They are better able to make off-the-radar investments that are simply too small for multi-billion dollar managers to invest in, such as attractive small-cap companies.

By contrast, established managers typically have a more institutional investor base and institutional investors are normally not as performance-dependent. More established fund managers with larger AUM earn substantial management fees, even with average performance. Therefore, established fund managers may not be as motivated to outperform, especially if it requires them to maintain the risk profile that produced their historic performance. Lower risk tolerance often leads to average performance.

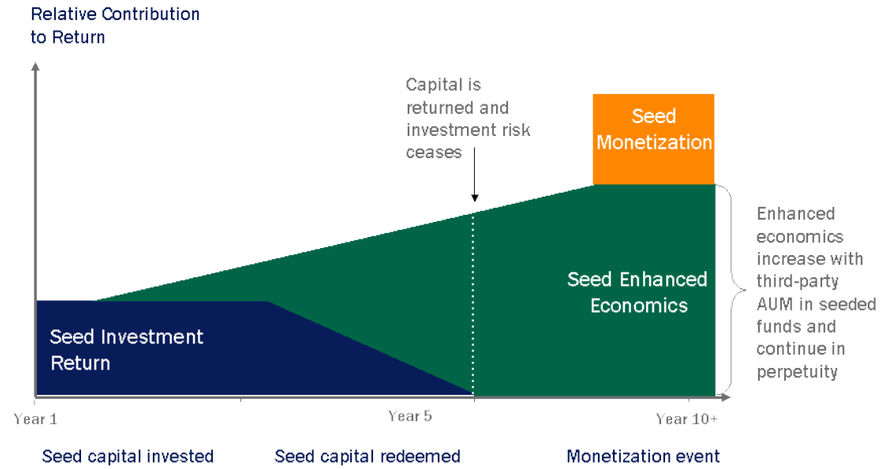
1.3. Enhanced Economics of Hedge Fund Seeding

A seeder's return potential is greater than that of other investors in a hedge fund because the seeder usually receives a portion of the hedge fund's revenue stream. Thus, the seeder's reward grows in sync with the hedge fund's asset growth. The exact nature of the enhanced return varies substantially based on the terms of the seeding agreement. A seeder's participation can range from a simple fee discount to a majority stake in the manager's firm. The net return on investment to a seeder is always higher than that of regular LP investors in the same fund. Not only does the seeder earn a portion of the fees collected when third-party funds are raised but even in unusual cases where no additional third-party assets are raised, the seeder generally receives an effective fee rebate through a share of the management and incentive fees applied to the seed capital.

1.4. Manager Performance Drives Dual Return Components

A seed investment incorporates two return components – investment performance and share of revenues – but it is important to note that both are manager-driven. Obviously, investment performance depends on manager skill. The revenue share component depends on third-party asset growth and, as with most investment vehicles, hedge fund asset growth tends to be highly correlated to performance. Managers with lackluster performance will deliver neither the investment returns, nor the asset growth necessary for a successful seed investment. Therefore, seeding only managers with the ability to generate attractive returns in a variety of market environments is essential.

Exhibit 1: Composition of a Seeder's Return Over TIme



Source: Larch Lane Analysis

Exhibit 1 shows how the return composition of a successful seed investment shifts over time. Typically, in the first several years after seeding a fund, the vast majority of the investor's return comes from fund performance. Over time, as the fund's AUM grows, more of the return comes from enhanced economics. In many cases, the seeder continues to share in the fund's revenue even after redeeming the initial seed capital. These annuity-like payments may continue as long as the seeded manager continues to run a profitable firm. Also, depending on the deal terms, there may be a provision for the manager to buy out the seeder's interest or for the seeder to participate in a "monetization event" such as a sale or public offering of the fund. These can significantly enhance the seeder's return.

2. Where does this strategy fit in a portfolio?

Like hedge funds and private equity funds, a hedge fund seeding vehicle fits into a portfolio's alternative investment allocation. However, because seeding vehicles have characteristics of both hedge funds and private equity funds, determining their proper role in an institutional portfolio requires careful consideration of factors such as return potential, investment risk and liquidity. On an efficient frontier, we believe the risk/return profile of a seeding vehicle falls between funds of hedge funds and private equity funds.

2.1. Diversification Benefits

Whenever investors analyze a potential investment such as a hedge fund seeding strategy, it is important to consider the likely correlation of the investment to the rest of their portfolio. A group of early-stage hedge funds (ESFs) is likely to have a reasonably low correlation to an existing portfolio of more established hedge funds. ESFs typically hold portfolios that are substantially different than larger, more established hedge funds. For example, as discussed above, ESFs can invest in smaller, "less crowded" trades. Consequently, adding a hedge fund seeding strategy to an existing portfolio can potentially enhance returns and reduce overall portfolio risk.

2.2. Liquidity

There are several layers to a hedge fund seeding investment and each has a different liquidity profile. First, there is the liquidity of the seeding vehicle; next, the liquidity of the investment in the seeded hedge funds; and finally, the liquidity of the individual hedge funds' holdings.

Most hedge fund seeding vehicles require capital to be invested for an extended period, typically three to four years. This time frame is necessary because the seeding vehicle, in turn, commits capital to seeded managers for multiple years. If the seeding vehicle combines multiple seed investments in a single portfolio, it may take several years to identify and negotiate deals with a high-quality group of managers. In such cases, investors may agree to a staggered investment schedule, committing to an investment amount from which capital is drawn as seed deals are finalized. Specific liquidity terms vary depending on the structure of the seeding vehicle.

A seeding vehicle commits capital to individual hedge fund managers for a certain number of years and as those commitment periods expire, money is available to be reinvested or returned to investors in the seed vehicle. If reinvested, the money may be subject to the standard liquidity terms of the seeded hedge fund.

The fact that seeded hedge funds typically hold liquid securities distinguishes seeding vehicles from private equity funds, where the underlying investments are normally illiquid. The sponsor of the seeding vehicle can further improve liquidity by negotiating the right to redeem the seeded assets early if the seeded hedge fund violates certain terms, such as risk constraints or drawdown limits. For these reasons, a seeding investment is usually more liquid than a private equity fund and, in some cases, may even offer more liquidity than a typical hedge fund of funds.

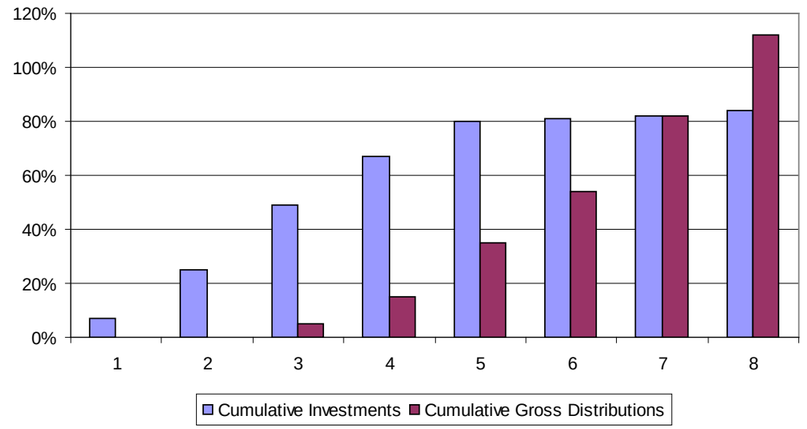
The ability of the seeder to request and enforce portfolio risk constraints provides added accountability and may improve overall liquidity. In 2008, some hedge fund managers strayed from their stated investment strategies, putting money into illiquid deals that exacerbated losses during the crisis. This is less likely to happen when the manager of a seeding vehicle is monitoring the portfolio and has the right to redeem from that fund if any risk constraints or other contractual terms are violated.

2.3. Cash Flow Comparison Highlights Liquidity Advantages

Another way to look at liquidity is to compare seeding vehicles to traditional private equity structures. Exhibit 2 shows the gross investments and distributions of a typical private equity fund using data from Prequin Hedge's Performance Analyst database, which includes empirical data for over 3,200 private equity funds worldwide. This private equity cash flow model shows that distributions exceeded the initial investment in year eight and, in fact, private equity vehicles typically tie up investor cash for seven to eight years. By comparison, hedge fund seeding vehicles typically return invested cash in three to five years.

Exhibit 3 shows how hedge fund seeding vehicles compare to other alternative investments in terms of liquidity,

Exhibit 2: Typical Gross Investments and Distributions for a Private Equity Fund



Source: Prequin Hedge: Private Equity Intelligence

Exhibit 3: Risk and Liquidity Characteristics of Various Alternative Investments

Strategy	Typical Lockup Period	Liquidity of Underlying Assets	Investment Risk (volatility)	Correlation to Traditional Assets
Venture Capital	6-10 years	Highly Illiquid	Medium	Low
Infrastructure	5-8 years	Highly Illiquid	High	Low
Mezzanine	5-8 years	Highly Illiquid	High	Medium
Hedge Fund Seeding	3-4 years	Varies	Low/Medium	Low/Medium
Passive Hedge Fund of Fund Investing	Varies	Varies	Low	Low/Medium

Source: Prequin Hedge, Larch Lane Analysis

investment risk and correlation to traditional investment assets.

We believe the added return from enhanced economics is more than enough to compensate hedge fund seed investors for reduced liquidity relative to direct hedge fund investing. In fact, we believe hedge fund seeding vehicles may offer higher return potential precisely because they fill a liquidity gap between private equity and traditional hedge funds. Investors who are willing to consider an opportunistic strategy that does not fit neatly into a pre-defined investment silo can reap ample rewards.

3. Common Seeding Models

Thus far, this paper has focused on seeding relationships in which the hedge fund manager provides a perpetual revenue share in exchange for seed capital. Other seeding models are available and though a detailed

discussion is beyond the scope of this paper, below is a brief summary of three common approaches:

3.1. Equity Ownership

The seeder provides capital in exchange for equity ownership in the manager's business and typically takes an active partnership role. Considerations in this arrangement include the deployment of the capital (which can be seeded into the manager's hedge fund or invested directly into the management company), the level and nature of the seeder's participation in the manager's business and the potential tax consequences of being an active participant, rather than a passive investor.

3.2. Revenue Sharing

The manager agrees to share a certain percentage of management and/or incentive fees in exchange for a capital commitment. The investor does not explicitly obtain an ownership stake in the business. The revenue share can be structured as an allocation from the underlying hedge fund or as a payment from the management entity.

3.3 Platform Providers

A number of large, established hedge funds and financial institutions offer startup hedge funds a "turnkey" solution. The sponsor provides an investment platform, marketing and operational support and seed capital. In return, the platform provider typically receives a significant share of the manager's profits. These solutions let managers quickly begin implementing the strategy and focusing on investment performance and may give them an attractive base salary or draw, but the managers are not truly running the fund as an independent business.

In all seeding models, the manager and the seeder must negotiate a wide range of terms. Each model has advantages and disadvantages and the best solution depends on the preferences of the parties involved in the deal. Exhibit 4 summarizes the main considerations for the three seeding structures described above.

Exhibit 4: Comparison of Hedge Fund Seeding Models

Seed Model	Pros and Cons for Manager	Pros and Cons for Seeder
Equity Ownership	Pros Maintain independence and build franchise value Input and assistance in building the business	Pros Ability to exert control over manager's business Participate in manager's success while allowing manager some independence
	Cons No scale to hedge fund More intrusive than pure revenue sharing	Cons Capital covers management company expenses; more dependent on growth in third-party assets Potential liability and regulatory reporting issues Potential tax consequences of active participation
Revenue Sharing	Pros Maintain independence and build franchise value Autonomy over business/least intrusive Future funds and strategies may not be affected	Pros Capital exposed to investment strategy return potential Portfolio risk controls Independence from management company
	Cons Minimal support aside from capital Manager is typically responsible for management company expenses prior to calculation of revenue share	Cons Limited or no control over manager's business decisions No portfolio level control
Hedge Fund Platform	Pros Immediate access to significant capital Access to operational and marketing infrastructure Lower business risk	Pros Direct control and oversight over all aspects of manager's investment process and business Best liquidity profile
	Cons No independent business May not have complete investment autonomy Potential difficulty in separating from the platform provider	Cons Resource intensive No separation of liability

Source: Larch Lane Analysis

4. Case Study: The Life of a Seeding Transaction

Initiating, executing and monitoring a hedge fund seeding transaction is a complex undertaking. Experience is vital to a smooth and ultimately successful seed investment. While many fund of fund firms allocate capital to established hedge funds, the universe of dedicated seed capital providers is much smaller. The following case study presents a start-to-finish look at the life cycle of a seeding transaction.

4.1. Sourcing

A hedge fund seeding transaction begins the same as any other hedge fund investment. The first step is to identify prospective manager candidates. Sourcing prospects is an important component of the seed investment process and requires a strong network and specialized contact points outside the traditional hedge fund business.

4.2. Investment Process Due Diligence

No amount of revenue sharing or deal structuring makes up for mediocre investment results. First and foremost, the team that is being seeded has to be talented and have the ability to generate attractive returns.

Though similar to the investment due diligence process for traditional hedge fund investments, choosing funds to seed is more challenging because shorter track records are common and quantitative analysis more difficult. Effective selection must consider the management team's quality, investment experience and business management skills, the nature of the investment strategy and execution process, portfolio risks and the risk management process and trading capabilities. Developing a strong proof statement and conviction in the manager's ability to generate returns is critical.

4.3. Reference and Background Checking

Mark Twain is reported to have once said that history does not repeat itself, but it sure does rhyme a lot. We believe that saying applies to people as well. It is essential to engage in extensive reference checking because it indicates how an individual has behaved in the past, but more importantly, it provides indispensable insight into how the individual is likely to behave in the future, both in terms of investment acumen and integrity. References from peers, counterparts and clients quickly raise any warning flags such as exaggerated past performance or other integrity issues. Third party background checks should be performed on all principals of a potential seed manager.

4.4. Operational Due Diligence

Recently, some widely publicized hedge fund frauds have shaken investor confidence and underlined the importance of a strong operational infrastructure. A thorough operational review is critical to a hedge fund seeding decision for two key reasons: (1) more hedge funds fail due to poor business infrastructure than poor investment decisions, (Kundro and Feffer, [2004]), and (2) studies show that the higher failure rate of start-up managers compared to established managers is often due to business rather than investment issues (Christory, Daul, and Giraud, [2007]).

While ESFs may be held to different operational standards than established firms, the minimum acceptable standard for any hedge fund has risen. ESFs may not yet have dedicated, full-time compliance officers and technology professionals, but they are expected to have in place codified policies, controls and systems that are adequate for their current business and consistent with any legal or regulatory requirements to which they are subject. They are also expected to have relationships with reputable service providers. Seeded funds should meet minimum standards in the following areas:

- governance structure and decision making processes
- compliance policies and procedures, particularly valuation procedures
- day-to-day operations
- third-party service providers (audit, administration, prime brokerage, custodians, legal counsel)
- internal controls, particularly cash controls

4.5. Structuring a Transaction

While many seeders have their own standard agreement and structure, each seed transaction is unique based on the management team, the seeder's expectations and the investment strategy to be pursued. The categories discussed here pertain to most seed transactions regardless of structure.

Deal structuring negotiations serve as a useful extension of the due diligence process. How potential seed managers negotiate terms and the relative emphasis placed on particular terms provide insight into their business acumen and motivation. The negotiation process also provides a glimpse into the ongoing interactions after the seed investment is made.

Although there are many facets to every seeding transaction, here we focus on three primary features: economics, fund and management structures and risk controls.

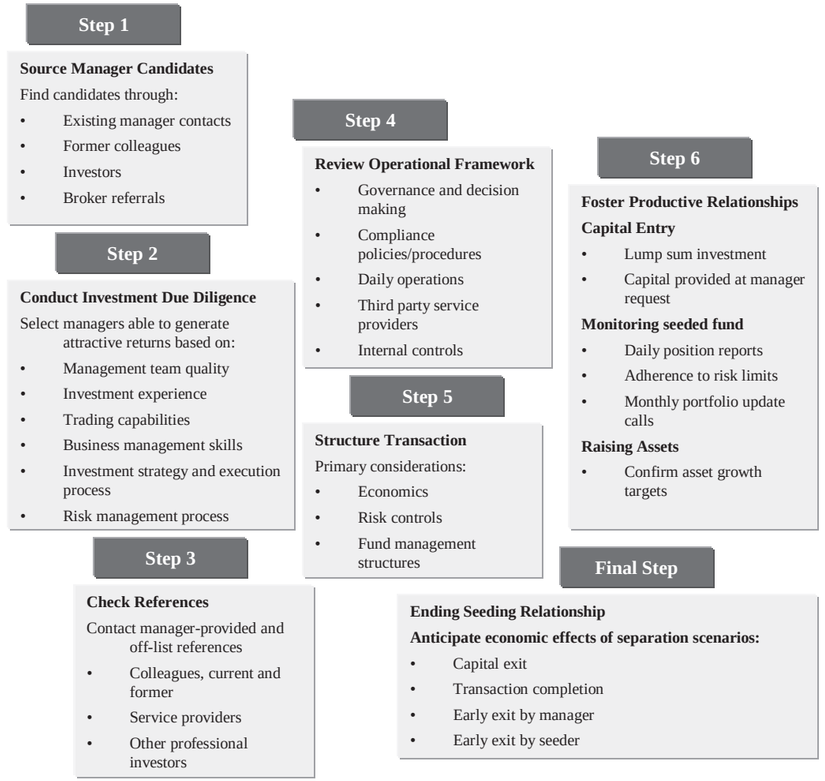
4.5.1. Economics

The economic terms of seed transactions are among the most sensitive and are generally kept confidential from the marketplace. Revenue shares range from 10% to 40% or more. Where a given seed transaction falls within that range depends on many factors including the amount of capital provided, liquidity terms, seed fund capacity, strategy, team experience and competition. Before 2008, a widely accepted rule of thumb was for a seeder to expect 1% of revenues for each $1 million of seed capital. Though this rule breaks down quickly as seed transactions reach and exceed $50 million, at smaller transaction sizes, the rule still seems to hold. In some instances, terms may be even more favorable to the seeder than the 1% per million rule of thumb.

4.5.2. Risk Controls

Controls on fund activities are intended to define the "bucket of risk" attached to the investment. Unlike investors in passive hedge funds where offering memoranda typically allow extremely broad latitude, seeders can

Exhibit 5: Executing a Successful Seed Investment



Source: Larch Lane Analysis

negotiate real limitations on the seeded fund's use of their capital. These risk controls are tailored to the strategy and the manager's particular investment approach. Examples can include exposure limits, position liquidity limits, allowable securities or instruments and VAR allowances.

Once controls are set, the seeded fund must provide reporting and transparency, while the seeder must continuously monitor to ensure that limits are adhered to. The relationship between a seeder and the seeded fund is an evolving one. Adjustments to risk constraints are possible as the seeder works collaboratively with management teams to respond to changing investment environments and opportunities.

4.6. Ongoing Relationship

Once the seed investment is made, the parties enter a multi-faceted business relationship. One facet is the continual monitoring of the seeded fund and management to ensure adherence with the agreement, particularly the risk parameters. Typically, management provides enhanced transparency into portfolio holdings and accounting records to facilitate monitoring. Because asset growth is necessary for a successful seed transaction, capital raising is a critical component of the ongoing seed relationship. In the platform model, marketing and capital

introductions are largely driven by the seeder, while seeders using other models can take a more passive role.

4.7. Ending the Seeding Relationship

All seed transactions must plan for the relationship's conclusion. Such planning includes (a) defining the circumstances or events that allow a party to separate, (b) outlining the economic effects of the separation and (c) specifying any continuing duties or obligations between the parties. Below are a few situations to be anticipated and their related issues.

4.7.1. Capital Exit

Seed capital is committed for a defined period of time to provide stability and promote the seeded fund's growth. By its nature, seed capital represents a significant portion of the fund's initial assets. If seed capital remains a significant portion of the fund's total assets at the expiration of the seed commitment, the seeder and manager must manage the liquidity event, possibly even maintaining seed capital investments beyond lock-up, to avoid weakening the fund or inhibiting its growth.

4.7.2. Completion of the Transaction

Seed relationships that terminate as a result of "normal" contemplated events (the exercise of a negotiated buy-out, the achievement of certain return hurdles or the term expiration) generally result in a clean separation of the parties, leaving few, if any, continuing obligations.

It is important to note that the term of the seed capital investment and the revenue participation are not necessarily tied. In many seeding models, the completion of an investment term and withdrawal of seed capital does not end the revenue sharing arrangement.

4.7.3. Early Termination by Manager

A manager could end the seed relationship for any number of reasons, including lack of investment opportunities for the specific strategy, lack of fund growth and insufficient revenue for the management team. This is a painful option for the manager and can be accomplished only through dissolution of the seeded fund and/or the management company. Typically, seeded managers are subject to non-compete restrictions.

4.7.4. Early Termination by Seeder

The primary method for a seeder to end a relationship is to withdraw capital due to occurrences such as breach of a covenant or risk constraint. In such situations, the seeder must consider the potential impact of the capital withdrawal. In many cases, the early withdrawal of seed capital leads to the demise of the fund, especially if it has not yet raised significant external capital. Therefore, the seeder must weigh the seriousness of the breach against the strength of the manager's strategy and the desire to continue participating in future economics.

5. Conclusion

The excess return potential from emerging hedge fund managers can provide attractive investment results. Seeders and investors in seeding vehicles earn higher returns than regular investors in the same hedge fund by sharing in the economics of the hedge fund manager. To the extent that a seeded fund attracts significant third-party assets, the seeder's revenue sharing rights can significantly enhance return.

Hedge fund seeding vehicles are a practical, professionally managed option for institutions and individuals seeking to profit from the many available seeding opportunities.

A hedge fund seeding vehicle is particularly appealing to investors who:

- want greater potential returns than those of a typical hedge fund portfolio
- need to diversify a large multi-manager portfolio
- want more transparency than is typically provided by a traditional hedge fund
- are looking for interesting co-investment opportunities
- want to capitalize on the hedge fund industry's growth, not just its return potential
- are interested in private equity-like returns with better liquidity

Our analysis suggests that seeding vehicles fall between hedge funds and private equity funds in terms of reward/risk and liquidity. Investors considering a seed investment strategy should have a multi-year investment horizon and be willing to tolerate some short-term volatility.

No seeding investments and no two seeding vehicles are identical. Every transaction is a highly structured, carefully negotiated deal. In the end, the success of individual seed investments and the performance of seeding vehicles depend on many factors, most notably, prudent manager selection, fair and informed negotiations and effective implementation. When evaluating a seeding vehicle, it is critical to carefully consider the sponsor's history because prior seeding experience adds value at every stage of the process.

In the aftermath of 2008's market upheaval, there is a tremendous shortage of capital available to new hedge funds. Meanwhile, the quality of new hedge funds seeking seed capital is significantly higher than we have seen in the recent past. Consequently, we find the current market environment extremely attractive for seeders. Investors who believe hedge funds will resume their growth trajectory and continue to play an important role in the investment landscape should consider a seeding vehicle as a way to capitalize on the industry's recovery.

References

Aggarwal, Rajesh K. and Philippe Jorion. "The Performance of Emerging Hedge Fund Managers." American Finance Association Meeting Paper. January 23, 2008.

Christory, Corentin, Stephane Daul and Jean-Rene Giraud. "Quantification of Hedge Fund Default Risk." 2007. EDHEC Working Paper.

HFR Asset Management. "Emerging Manager Out-Performance: Alpha Opportunities from the Industry's Newest Hedge Fund Managers." 2005.

Jones, Meredith. "An Examination of Fund Age and Size and Its Impact on Hedge Fund Performance." PerTrac Financial Solutions, 2009.

Kundro, Christopher and Stuart Feffer. "Valuation Issues and Operational Risk in Hedge Funds." Journal of Financial Transformation, 2004, vol. 10, pages 41-47.

Author Bios

Mark Jurish is the Chief Executive Officer, a Director and member of the Investment Committee of the Investment Manager. Mr. Jurish founded and controls Larch Lane Advisors L.P. and its general partner, Two American Lane Corporation, the prior investment managers to the Fund, and has managed the Larch Lane Funds from their inception. In addition, he is the founder and Chief Executive Officer of HFIC Partners, LLC and HFIC II GP, LLC, the managing entities for Hedge Fund Investment Company, L.P., HFIC Offshore, Ltd., Hedge Fund Investment Company II, L.P., and HFIC II Offshore, Ltd., all private investment vehicles investing in early-stage hedge funds. Previously, he served on the Board of Directors for the Managed Funds Association, on the Best Practices Committee of the Greenwich Roundtable and as an Independent Trustee of the MBIA Capital/Claymore Managed Duration Investment Grade Municipal Fund. Mr. Jurish received his B.A. from State University of New York at Albany and his M.B.A. in Finance from New York University.

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Todd Williams serves as Chief Legal Officer and Chief Compliance Officer for the Investment Manager. From March 2003 to July 2003, Mr. Williams was at Ranger Capital, a Dallas based hedge fund group as Assistant General Counsel. From September 1998 to February 2003, Mr. Williams was an associate at Akin Gump Strauss Hauer & Feld in Dallas, where he focused on forming and representing pooled investment vehicles and investment advisers. Mr. Williams has significant experience in the formation and regulation of private investment pools and their advisers as well as venture capital, general securities and mergers and acquisitions experience. Mr. Williams received his B.A. from Trinity University and is J.D. from The University of Texas School of Law.

IPD Global Cities Report 2012

Max Arkey, Senior Manager of Business Development at IPD North America

2011: The Year in Review

If 2010 represented a comeback year for global property markets, then 2011 must have given real estate investors pause for concern. The year kicked off with a bang—severe flooding in Australia, a wave of political instability across North Africa and the Middle East, and a cataclysmic earthquake and tsunami in Japan. Investors remained patient at first, but by mid-year, confidence began to unravel as more issues mounted. A key worry was that policymakers in Europe and the U.S. appeared increasingly unable to manage their respective fiscal situations. As leading indicators retreated, economists began incrementally scaling back their forecasts. As all of this unfolded, financial markets fell into a downward trajectory that lasted until late in the year.

So how did this pattern of economic events impact the world's property markets in 2011? Very little it appears, at least at the surface. IPD's All Property global index of total returns (comprised of retail, office, apartment, and industrial assets) actually ticked up from 9.4% in 2010 to 9.8% in 2011. The geographic composition of IPD's weighted All Property global index may partially explain how commercial real estate fared so well in 2011.

- First, the U.S. economy in late 2011 was less fragile than initially perceived.
- Second, large markets like Canada and Australia continued to find swift demand for their exports.
- Third, the initial economic dent caused by Japan's earthquake showed signs of stabilizing by year-end as the country geared up for reconstruction in affected areas.

Exhibit 1: IPD 2011 Annual Global Cities Update Coverage

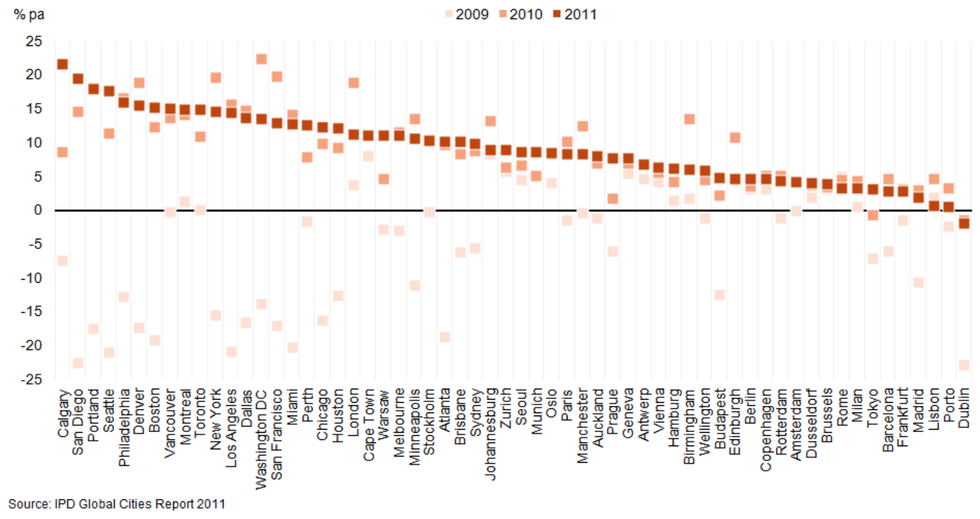
Source: IPD Global Cities Report 2011

- And finally, recession in Europe masked significant geographic differences in growth between those peripheral Eurozone sovereigns which had fallen into deep recession and the core markets of North Central Europe where economic indicators were considerably less dire, especially in the first half of 2011.

As we did a year ago, IPD has now disaggregated the year's commercial property performance across 60 cities globally. All trends shown in this report are based on performance in local currencies. By keeping performance in local currency, the intent is to highlight pure property dynamics alone, without regard to currency fluctuations or repatriation of returns. IPD compiles operating data from more than 60,000 individual assets worldwide (which are valued at U.S.$1.3 trillion) to measure the overall performance of property sectors and markets.

Exhibit 2: Annual Performance 2009-2011

Exhibit 3: Performance Momentum, 2009-2011

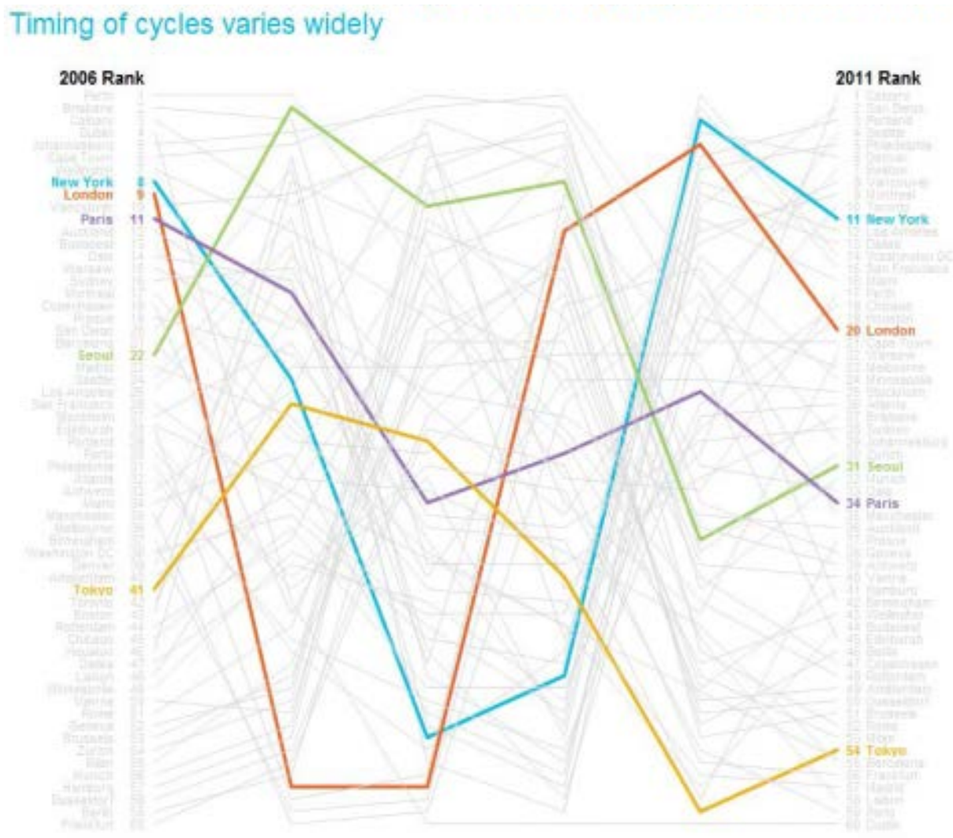


Source: IPD Global Cities Report 2011

While 2010 ushered in a clear cyclical recovery across global city property markets, 2011 provided more nuance. The year's most palpable shift was the strengthening of urban property markets across Canada. Calgary was one of the world's most improved markets, with total returns of 8.7% in 2010 shooting up to 21.6% in 2011. An energy-driven economic boom in Alberta, Calgary's home province, generally benefited the city, and brokers reported prime office space in the central business district to be near full occupancy at year-end.

Total returns in the U.S. and Australia offered mixed indicators of momentum in 2011. In the U.S., a few cities like San Diego and Seattle built steadily on their already solid returns from a year ago. Chicago and Houston also strengthened, though the gains were less robust. Elsewhere, several major U.S. cities that had turned in stellar performance in 2010 began to lose momentum during the year. Washington, San Francisco, and New York were among those U.S. markets with lower performance in 2011 than in the previous year. In Australia, most of the upward momentum in 2011 could be traced to Perth. A year ago, Perth's All Property total return of 7.8% lagged behind Melbourne, Sydney, and Brisbane, but in 2011 the city's All Property return rose to 12.7%, catapulting Perth ahead of its domestic rivals on the eastern side of the continent.

Exhibit 4: All Property Return Rankings For 5 Major Global Cities Since 2006



Source: IPD Global Cities Report 2011

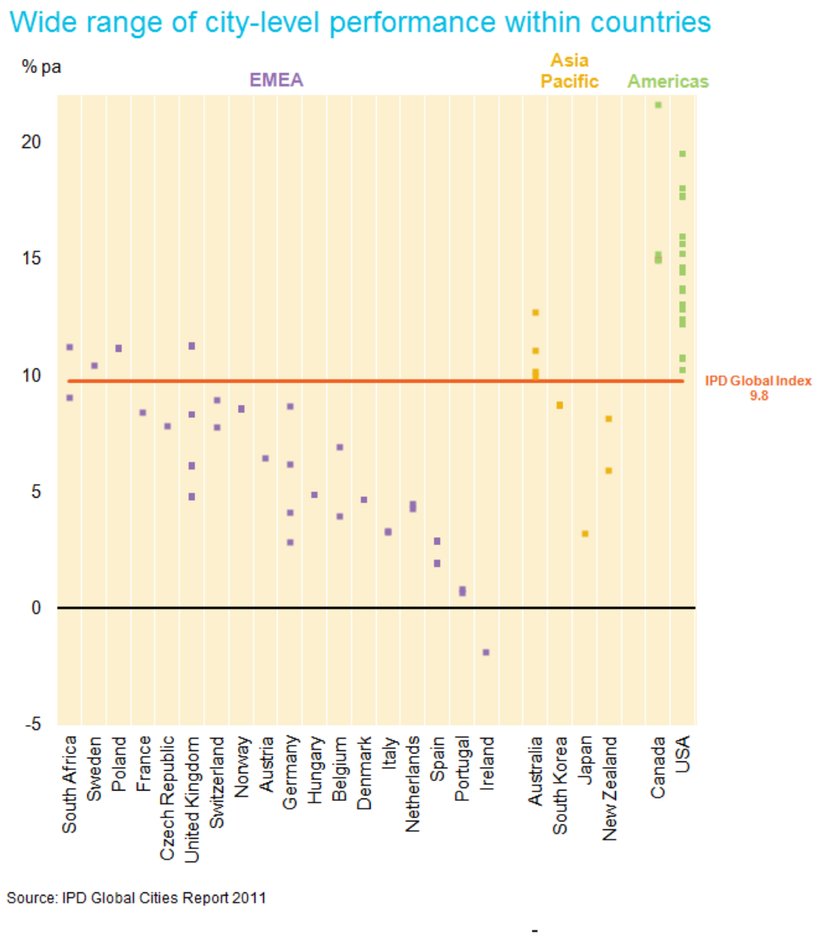
In Europe, the UK markets ceded considerable ground in 2011. All Property total returns in Manchester, Birmingham, and Edinburgh fell back into single digits from strong double-digit performance a year earlier. London also lost ground, though its total return of 11.2% in 2011 left it perched in the double digits, enough to keep it ahead of weaker cities in the U.S. (Minneapolis, Atlanta) and Australia (Melbourne, Brisbane, Sydney). Total returns in the rest of Europe were relatively stable, though a few cities—including Paris and all of the Iberian cities—did pull back from their year-ago returns. At the same time, total returns still edged up marginally across most German cities (Frankfurt was an exception). Eastern European cities also stirred in 2011, with total returns rising in Warsaw, Prague, and even Budapest.

In Asia, All Property total returns strengthened in Seoul, from 6.7% in 2010 to 8.7% in 2011. Of the 60 global cities IPD covers, Seoul's performance stood almost exactly at the median in 2011, positioning it ahead of most of Europe but still trailing all of the North American cities. Only four cities in Europe—London, Warsaw, Stockholm, and Zurich—provided higher returns in 2011 than did Seoul. Tokyo's All Property total return moved into positive territory in 2011, leaving Dublin as the only city with declining overall performance among the 60 observed. Investors will keep a close eye on Tokyo in 2012. A construction overhang looms over the city's office sector in 2012, but in the industrial sector fundamentals have shown solid improvement.

Two subtle trends can be gleaned from IPD's data on global cities in 2011. The first underscores the divergence of cyclical patterns across property markets. Variations in cyclical timing can force dramatic shifts in the relative ranking of cities based on their total returns. As an example, consider five key property markets—London, New York, Tokyo, Paris, and Seoul—spanning three continents. In 2006, major markets like New York, London, and Paris were among the best performing of the 60 cities IPD covers. In 2007, with the global property cycle beginning to turn, these three cities tumbled quickly in the rankings, especially London which fell out of the top 10 to the 57th position in a single year. From 2007 through 2009, cities like Seoul filled the void left behind. For three consecutive years, Seoul ranked among the 10 best performing urban markets as the global economy stumbled. Though it was always lower in the annual rankings than Seoul, Tokyo's property market still followed a similar trajectory over the past cycle, rising up in the rankings as more volatile cities slipped back. Now skip forward to 2011. The shifts in ranking over the past year are notable for their subtle similarities to 2007. London, New York, and Paris again slipped down in the rankings in 2011, just as Seoul and Tokyo began moving up the chain in relative performance.

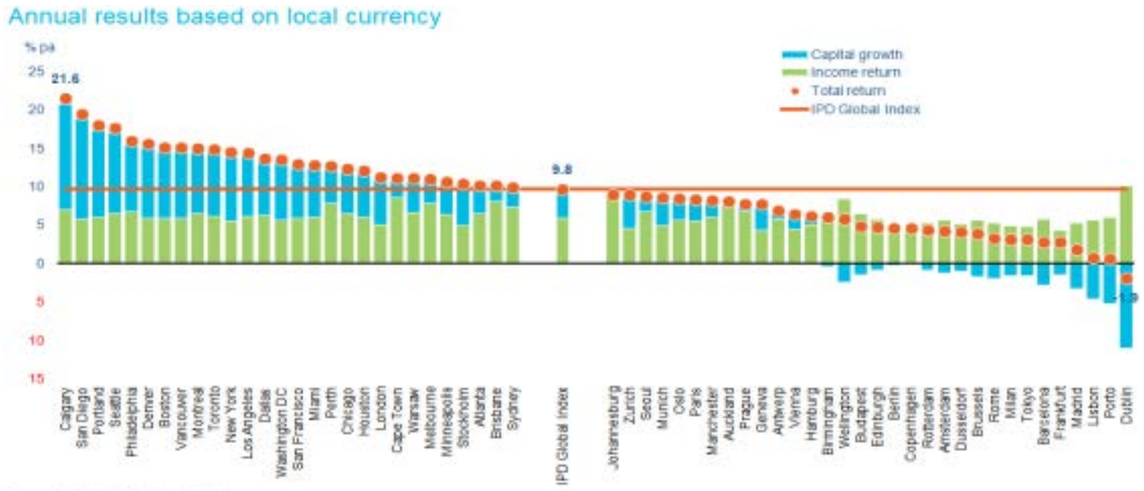
A second trend that can be illuminated in the 2011 data is the variation in property market performance within countries. Calgary's 21.6% total return and Dublin's -1.9% represented the two extremes of the global market in 2011. The performance of these two cities was separated by 2,350 basis points (bps). It is often assumed that much of the variation across markets can be explained by country performance and that cities within individual countries vary only marginally from each other. IPD's global city performance data shows this is not necessarily the case. In the handful of countries—Australia, Canada, Germany, the UK, and the U.S.—where IPD's coverage extends to three or more cities, a relatively wide range of intra-country performance could be observed in 2011. In the U.S., for example, the city with the best performance (San Diego) was separated from the worst (Atlanta) by 928 basis points. These U.S. city variations alone equated to 39% of the global performance range in 2011.

Exhibit 5: All Property Returns For Global Cities By Respective Country, 2011



Source: IPD Global Cities Report 2011

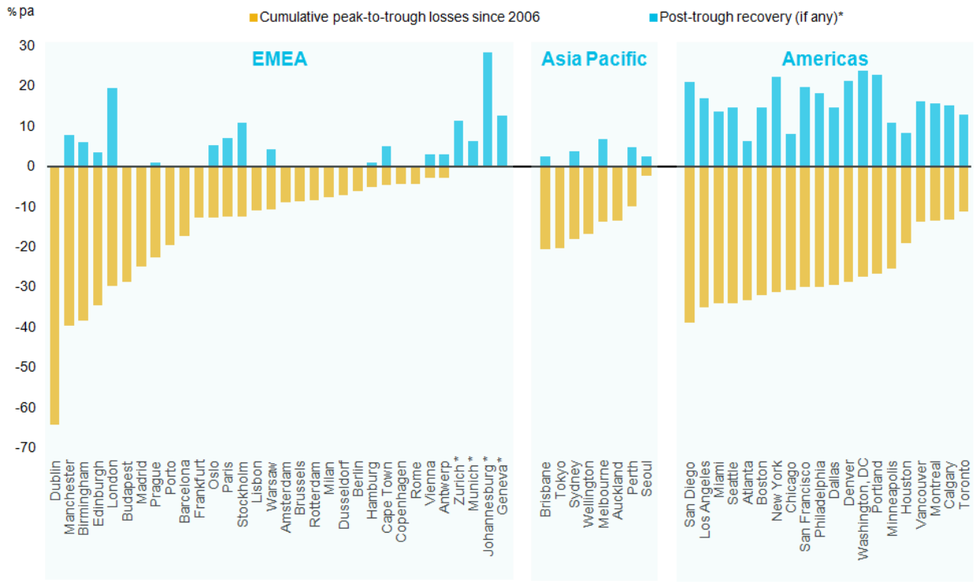
Exhibit 6: Total Global Returns By City, 2011



Source: IPD Global Cities Report 2011

Exhibit 7: Cumulative Cyclical Capital Value Losses And Subsequent Recovery

Full recovery in Canadian markets / progress in US / EMEA and AP still a long way to go



*Note: For those markets that did not experience a cyclical trough in capital values after 2006 (i.e., Geneva, Johannesburg, Munich, Zurich), the "recovery" shown is cumulative growth since 2006.

Source: IPD Global Cities Report 2011

Smaller countries than the US also showed significant variation across their domestic urban markets. The range of city performance in Canada (666 bps) and the UK (647 bps) each took up about 28% of the global spectrum. German cities, separated by 585 bps from best (Munich) to worst (Frankfurt), sprawled over 25% of the global range, and Australian cities (280 bps) stretched across 12% of global performance bandwidth.

1. Performance and Pricing

Positive total returns could be found in 59 of the 60 global cities in 2011, with Dublin the sole exception. The year's solid performance owed greatly to income returns, which offset lagging capital growth. Capital value declined in 20 of the 60 cities in 2011. These included all of the cities in the troubled Eurozone markets of Ireland, Spain, Portugal, and Italy. Capital values also slipped in parts of Germany and the Benelux region as well as in Tokyo. In only 18 of the 60 markets did capital growth actually exceed income return in 2011, and of these cities, 16 were in North America. The two remaining cities were London and Stockholm.

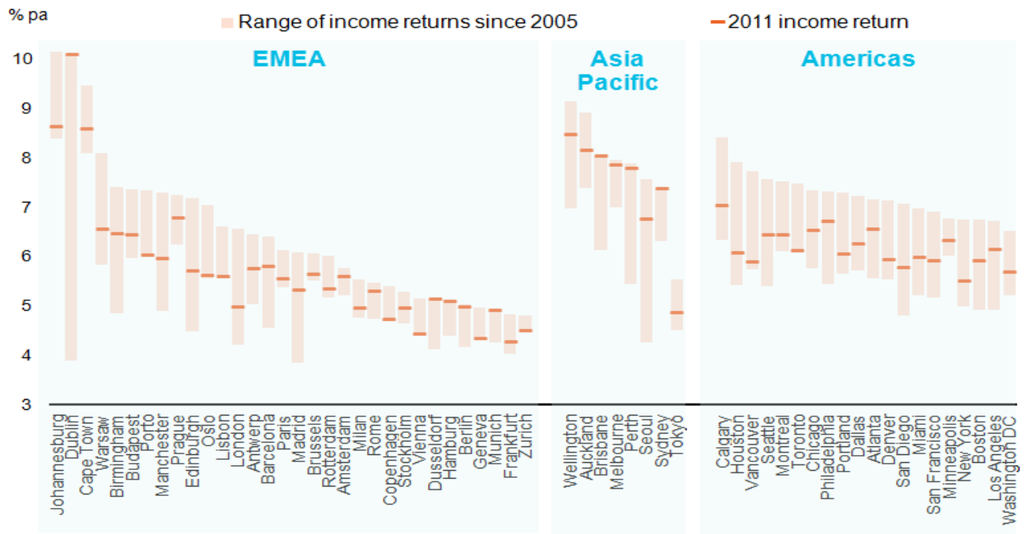
A surprising feature of 2011 performance was the sheer scale of income returns, especially in some of the underperforming markets. Dublin's unprecedented 10.1% income return exceeded the year's global total return of 9.8% a result of write downs in capital values rather than improving fundamentals. Cities in New Zealand and South Africa also turned in relatively high income returns.

The capital losses experienced across cities varied considerably over the course of the cycle. Dublin suffered the worst decline, with values falling by more than half from peak to trough. Among the other cities, the steepest declines were mostly in the UK and the US. While Dublin has yet to recover any of its losses, the UK and U.S. cities have shown varying degrees of progress. The regional UK cities (Birmingham, Edinburgh, and Manchester) and U.S. cities with relatively sluggish economic recoveries (e.g., Atlanta) have reclaimed little of their lost values so far. Other cities like London and Washington have made progress, but capital values still have a long way back to 2006 levels.

Property in Canadian cities lost less cumulative value than in the U.S., and recovery in these markets is now well advanced. In Asia, the same is true for Seoul where peak-to-trough losses were marginal, and small subsequent gains in capital growth have been enough to offset most of the cumulative losses. In Europe, it was mostly Alpine

Exhibit 8: Range Of Returns Since 2005

Annual all property income returns by city, sorted on peak year



Source: IPD Global Cities Report 2011

cities—Geneva, Zurich, Munich, Vienna—where property values held up well in the downturn. Even modest recoveries in capital growth in these cities put them in good position relative to other markets. The South African cities, especially Johannesburg, have also shown solid capital growth, though high levels of inflation during the past few years may negate some of this performance in real terms.

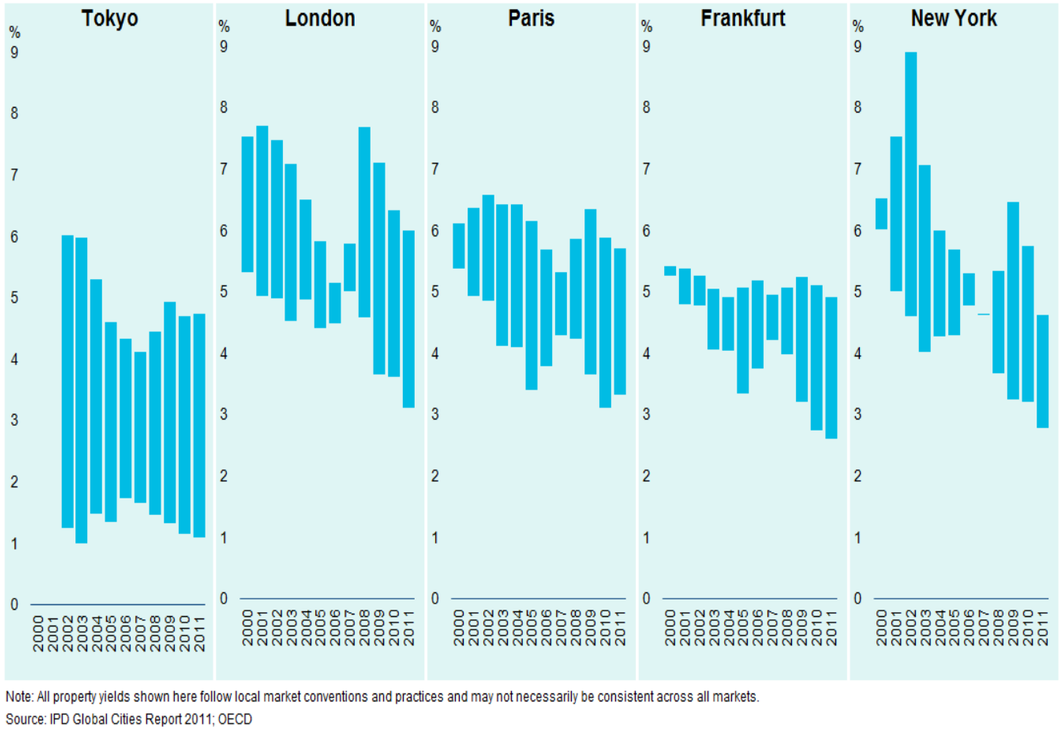
Dublin's extraordinary All Property income return of 10.1% in 2011 is the highest in this Irish city's recent history, and Dublin's range of income return since 2005 is unmatched by any of the other 59 cities. Dublin property delivered an income return of just 3.9% in 2007. Only one other city of the 60 in IPD's dataset has delivered a lower income return in the past seven years and that was Madrid with 3.8% in 2008.

Income returns in European cities drifted in different directions in 2011. Like Dublin, income returns in the German cities of Berlin, Dusseldorf, Hamburg, and Munich were at or near seven-year highs in 2011 (Frankfurt was an exception). In a few other European cities, income returns fell to seven-year lows. This occurred in Oslo, Copenhagen, Vienna, Zurich, and Geneva, as well as in Lisbon and Porto.

Outside of Europe, income returns in most markets fell well between the upper and lower bounds of the past

Exhibit 9: Relative Pricing Trends In Selected Major Cities

Spread between IPD all property local yield and 10-year national bond yield



Note: All property yields shown here follow local market conventions and practices and may not necessarily be consistent across all markets.
Source: IPD Global Cities Report 2011; OECD

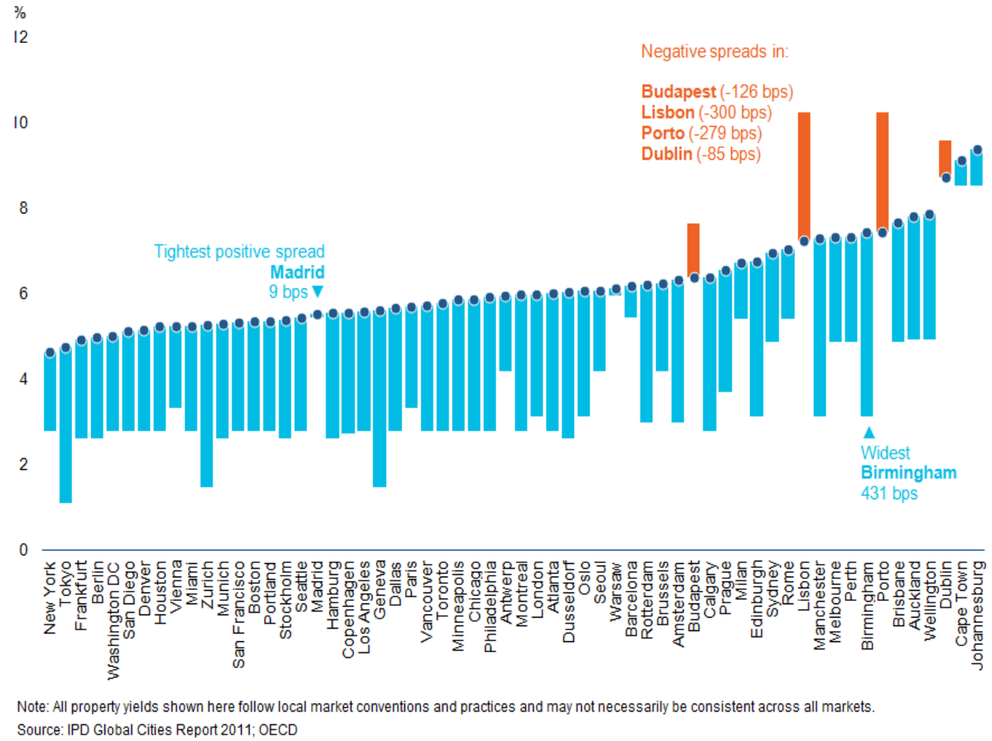
seven years. The exceptions were in the four Australian cities, where income returns edged close to record highs, and in Vancouver and Toronto, where income returns stood at near-record lows.

Yield spreads in the world's major financial capitals—Tokyo, London, Paris, Frankfurt, and New York—offered attractive opportunities to investors in 2011.

- Over the past decade, Tokyo has maintained consistently wide spreads. Even though Tokyo's low yield signals expensively priced real estate, the spread investors enjoy over Japan's rock-bottom interest rates gives the market some of its ongoing allure.
- In London, a falling All Property yield in 2011 was matched by a similar drop in interest rates. London's spreads have held relatively steady for the past four years, with yields and interest rates moving mostly in the same direction.
- Yield compression also occurred in Paris in 2011 even as sovereign borrowing costs were rising. This resulted in Paris's All Property spread narrowing to its lowest point since 2008.
- Over the last decade, Germany's long-term interest rates have fallen, but Frankfurt's All Property yield has moved little in the same period. Over time, Frankfurt's spread has grown increasingly wider.
- In the wake of the tech boom more than a decade ago, New York's yield pushed out to a relatively high

Exhibit 10: Relative Pricing At Year-End 2011 For Selected Cities

Spread between IPD all property local yield and 10-year national bond yield



Note: All property yields shown here follow local market conventions and practices and may not necessarily be consistent across all markets.
Source: IPD Global Cities Report 2011; OECD

level. Between 2002 and 2007, yield compression occurred so quickly that it nearly wiped out the city's spread. The market corrected, but four years later, the city's yield has compressed again, moving right back where it was in 2007. With U.S. interest rates falling, New York still offers around a 200 basis point spread, but that margin has certainly narrowed since 2009.

Of these five financial capitals, the local All Property yields in New York, Tokyo, and Frankfurt were the lowest of the 60 global cities in IPD's dataset in 2011. At the other end of the spectrum, Dublin's high yield was exceeded only by Cape Town and Johannesburg.

Negative spreads could be found in four of the 60 global cities in 2011. All of these cities—Lisbon, Porto, Budapest, and Dublin—were in countries facing daunting fiscal difficulties. In many other markets, wide spreads were apparent. Tokyo and Calgary, plus all of the regional UK cities (Birmingham, Manchester, and Edinburgh) and the Swiss cities (Zurich and Geneva) maintained spreads of at least 350 bps in 2011.

2. Property Sectors and Risk

Earlier in this paper, we highlighted the wide ranging differences in city-level All Property returns within individual countries. Digging even deeper into individual city performance, one can find yet more diversity lurking just beneath the surface. As an example, consider the two poles of the U.S. market in 2011. San Diego's 19.5%

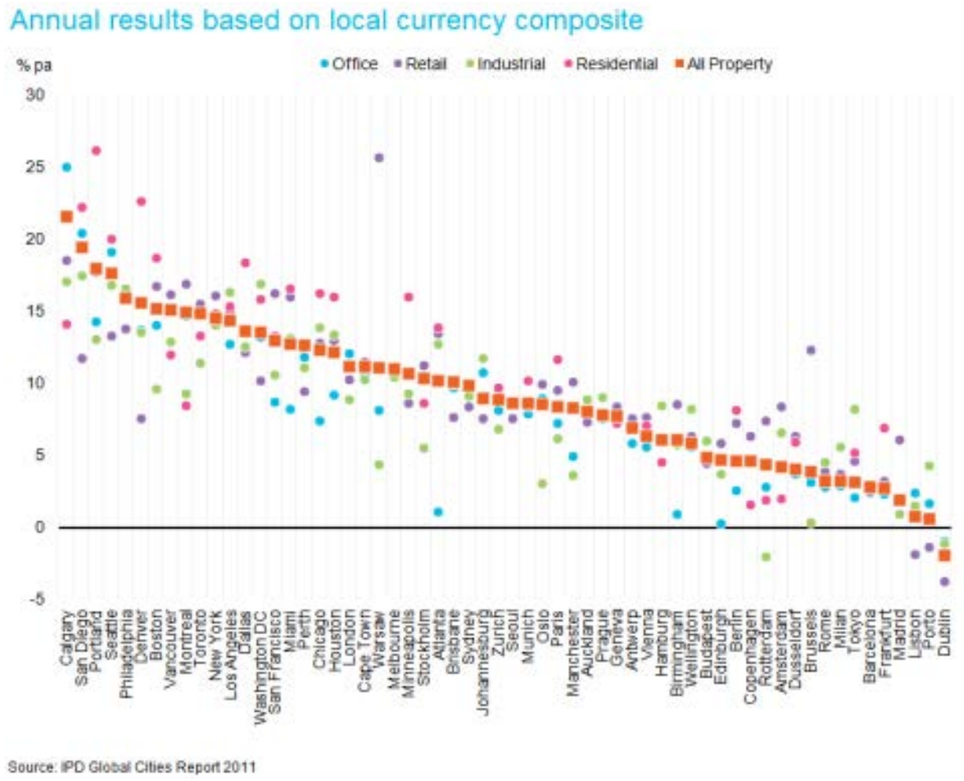
All Property total return was separated from Atlanta's 10.2% by 928 basis points. The property sectors within these two cities, however, did not move in lock-step. San Diego's residential (apartment), office, and industrial sectors tacked close to the city's All Property average, but retail lagged behind. More than 1,000 basis points separated the city's best and worst performing sectors—an even wider margin than the one separating San Diego's All Property total returns from Atlanta. In fact, San Diego's retail sector even underperformed Atlanta retail. San Diego's performance was not an isolated occurrence. Now consider Atlanta. Even though the city's All Property total returns lagged other U.S. cities, three property sectors (apartment, retail, and industrial) all performed reasonably well with returns of 12% to 14%. Atlanta's overall performance was held back by its office sector. Of the 58 cities in which IPD could tabulate performance for the office sector, Atlanta ranked 54th with a total return of just 1.1%. The office sectors in Dublin, Madrid, Edinburgh, and Birmingham were the only ones providing a lower return to investors in 2011 than Atlanta.

In seven out of 60 cities worldwide, the best and worst performing sectors were separated by at least 1,000 basis points. In addition to San Diego and Atlanta, the other cities were Calgary, Portland, Denver, Warsaw, and Brussels. Of these, the widest performance differential across sectors occurred in Warsaw, with more than 2,000 basis points separating the industrial sector from retail. Warsaw provided investors with the best performing retail sector in 2011 of all the cities IPD analyzed. Poland's resilience to Europe's sluggish economic environment has attracted the attention of cross-border retailers eager to tap into a perceived European growth market. Yet the lack of existing available space (and only a limited supply of heavily pre-let new construction) has confounded those entering or expanding in this market. Tight retail fundamentals have sent rents shooting up, a trend that IPD's performance data seems to confirm.

Close examination of the city/sector data can also inform our broader perspectives of national and global performance. Look closely at Exhibit 11 and a few things become clearer.

- First, the apartment sector has provided a tremendous lift to the All Property performance of U.S. cities. Following years of lackluster performance in the for-sale housing market in the U.S., the country's apartment fundamentals have strengthened. Omit the apartment sector from All Property total returns in US cities, and the margin of outperformance in 2011 narrows.
- Second, with North American cities mostly outperforming their global counterparts in 2011, it becomes convenient to think of the U.S. and Canada as a uniform block. But again, look closely at the property sectors, and apartment performance cleanly differentiates U.S. cities from the Canadian ones. Where the apartment sector lifted U.S. performance, it clearly proved itself the laggard of urban commercial property in Canada. Total returns fell below the All Property average in all four Canadian cities and it was the worst performing sector in three of the four cites in 2011.
- Third, total returns to retail are notable in Europe as well as Australia. In Europe, retail properties generally outperformed the All Property averages in most markets. There were a few exceptions, the most notable ones being Dublin, Porto, and Lisbon, but in most European cities retail returned more to investors than the All Property average indicates. The situation in Australia is quite different. The country's skewed exchange rate has deterred international tourists and sent residents scrambling to find foreign internet retailers who can provide much better bargains than their local shops. Even as a boom in mining investment is driving the country's economic growth, Australia's retail employment has curiously declined as this sector's vitality has waned. Again, IPD's performance data seem to confirm this larger structural trend. In at least three Australian cities, retail was the worst performing property sector.

Exhibit 11: Total Return In 2011 By Property Sectors, Selected Cities



Source: IPD Global Cities Report 2011

For the year as a whole, the North American markets provided nine of the ten best performing city/sector combinations (Warsaw retail was the other). Of these ten city/sector outperformers, half of them were U.S. apartment markets. Conversely, the year's lagging performers were all in Europe. Seven of these ten lagging city/sector combinations could be pinpointed in Dublin or the Iberian cities.

Although our review of property sector performance in this report focuses largely on 2011, we also extend our lens on city/sector dynamics back over the past 10 years to assess risk. We found that the highest volatility markets (as measured by the standard deviation of total returns) were spread across all three global regions. Of the 10 city/sector combinations with the highest volatility, four were in Europe, four in the U.S., and two in Australia. Dublin was the only city to feature more than one high-risk property sector. The office sector accounted for eight of the 10 city/sector combinations. It is also worth noting that volatility, which is sometimes mistakenly associated with smaller or less diverse markets, can just as likely strike the largest and most mature of the world's markets. As a case in point, the office sectors in London, New York, and Los Angeles rank among the most volatile performers of the past decade.

The least volatile city/sector combinations fell exclusively in Europe, six in the office sector and four in retail. Swiss and German cities accounted for eight of the ten, but the other two were in Portugal. Lisbon and Porto office properties showed little shift in total returns over the past decade even though the retail sector in these two cities has been subject to much greater volatility.

Exhibit 12: Outlier Performance In 2011

The 10 highest and lowest total returns
for selected cities and property types

		Office	Retail	Industrial	Residential
EMEA	Amsterdam	4.1	8.4	6.6	2.0
	Antwerp	5.9	7.6	-	-
	Barcelona	2.5	2.5	-	-
	Berlin	2.6	7.2	-	8.2
	Birmingham	1.0	8.6	5.8	-
	Brussels	3.2	12.4	8.4	-
	Budapest	4.7	4.5	6.1	-
	Cape Town	10.7	11.5	10.3	-
	Copenhagen	4.5	6.3	4.5	1.6
	Dublin	-8.0	-3.7	-5.1	-
	Dusseldorf	3.8	6.4	-	6.0
	Edinburgh	0.3	5.9	3.8	-
	Frankfurt	2.3	3.2	-	6.9
	Geneva	7.8	8.4	-	7.2
	Hamburg	6.0	6.2	8.5	4.6
	Johannesburg	10.8	7.6	11.8	-
	Lisbon	2.4	-1.9	1.5	-
	London	12.1	10.3	8.9	-
	Madrid	1.6	6.2	1.0	-
	Manchester	5.0	10.2	3.7	-
	Milan	2.9	3.7	5.6	-
	Munich	7.9	8.4	-	10.2
	Oslo	9.0	10.0	3.1	-
	Paris	7.2	9.6	6.2	11.7
	Porto	1.7	-1.3	4.3	-
	Prague	7.6	-	9.0	-
	Rome	2.8	3.9	4.6	-
	Rotterdam	2.8	7.5	-2.0	2.0
	Stockholm	10.6	11.3	5.6	8.6
	Vienna	5.6	7.7	-	7.1
	Warsaw	8.2	-25.2	4.4	-
	Zurich	8.2	9.1	6.9	9.7
Asia Pacific	Auckland	7.7	7.3	8.9	-
	Brisbane	9.7	7.6	10.0	-
	Melbourne	10.9	-	10.5	-
	Perth	11.8	9.5	11.1	-
	Seoul	8.8	7.6	-	-
	Sydney	9.3	8.4	9.2	-
	Tokyo	2.1	4.6	8.2	5.2
	Wellington	5.6	6.3	8.2	-
Americas	Atlanta	1.1	13.5	12.7	13.9
	Boston	14.1	16.8	9.6	18.8
	Calgary	25.1	18.8	17.1	14.2
	Chicago	7.4	12.8	13.9	16.3
	Dallas	13.8	12.2	12.6	18.4
	Denver	13.7	7.6	13.6	22.6
	Houston	9.2	13.0	13.4	16.0
	Los Angeles	12.7	15.1	16.3	15.4
	Miami	8.2	16.0	13.2	16.6
	Minneapolis	-	8.7	9.3	16.0
	Montreal	14.8	17.0	9.3	8.5
	New York	14.6	16.2	14.1	14.9
	Philadelphia	-	13.8	16.6	16.1
	Portland	14.3	17.8	13.0	26.2
	San Diego	20.4	11.8	17.5	22.3
	San Francisco	8.8	16.3	10.6	13.3
	Seattle	19.7	13.4	16.9	20.8
	Toronto	15.6	15.5	11.4	13.3
	Vancouver	15.1	16.2	12.9	12.0
	Washington DC	13.2	10.2	17.0	15.9

= 10 highest returns in 2011
= 10 lowest returns in 2011

Source: IPD Global Cities Report 2011

3. The longer view: A look back across a turbulent cycle

If London and New York exemplify the volatile real estate cycle of the past few years, what can we say about those other cities that have coasted through the cycle with better overall performance? Most of these cities at the front line of performance (see shaded area of Exhibit 14) have benefited from vibrant commodities markets. Calgary, Vancouver, Perth, Cape Town, and Johannesburg have provided investors with the highest All Property annualized returns over the past five years. Moreover, a second tier of high-performance cities can also claim an indirect association with the commodities boom. Melbourne is the home base for some of the world's largest mining firms, including BHP Billiton, Rio Tinto, and Newcrest Mining. Barrick Gold and Yamana Gold are headquartered in Toronto. Even Zurich can claim loose ties to this sector, with Xstrata, Glencore, and Transocean among the companies based in its suburban canton of Zug. While the commodities boom may not be the primary driver in these markets, it has certainly not detracted from property performance in these cities over the past five years.

Exhibit 13: Outlier Long-Term Risk, 2002-2011

The 10 highest and lowest volatility scores*
for selected cities and property types

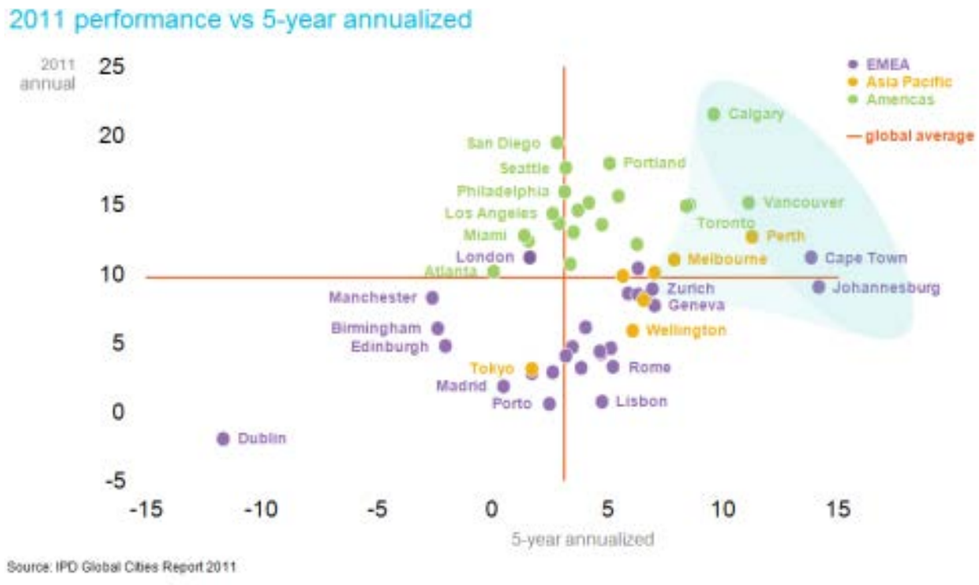
		Office	Retail	Industrial
EMEA	Amsterdam	3.8	4.0	4.8
	Antwerp	-	-	-
	Barcelona	6.9	-	-
	Berlin	1.8	2.6	-
	Birmingham	12.5	13.0	12.4
	Brussels	-	-	-
	Budapest	-	-	-
	Cape Town	8.6	11.1	9.0
	Copenhagen	4.2	3.0	-
	Dublin	18.1	23.5	15.5
	Dusseldorf	1.0	2.5	-
	Edinburgh	10.8	12.3	11.8
	Frankfurt	2.4	2.7	-
	Geneva	1.3	1.6	-
	Hamburg	2.1	1.7	-
	Johannesburg	7.4	7.8	9.6
	Lisbon	1.9	6.5	3.2
	London	14.2	12.8	11.9
	Madrid	8.5	9.4	11.3
	Manchester	12.1	13.1	12.9
	Milan	3.8	-	-
	Munich	2.5	1.4	-
	Oslo	8.1	5.8	-
	Paris	7.6	9.1	7.7
	Porto	1.7	7.6	-
	Prague	-	-	-
	Rome	3.1	-	-
	Rotterdam	4.9	3.7	5.2
	Stockholm	7.3	8.0	9.2
	Vienna	-	-	-
	Warsaw	-	-	-
	Zurich	1.2	2.0	-
Asia Pacific	Auckland	8.2	7.8	6.1
	Brisbane	15.2	-	10.2
	Melbourne	6.1	-	8.1
	Perth	15.3	-	-
	Seoul	-	-	-
	Sydney	7.8	-	7.4
	Tokyo	-	-	-
	Wellington	9.8	-	-
Americas	Atlanta	9.9	13.2	11.8
	Boston	14.5	11.3	7.9
	Calgary	13.6	8.0	8.8
	Chicago	8.4	12.0	9.5
	Dallas	11.2	-	9.2
	Denver	13.6	-	9.9
	Houston	13.9	-	-
	Los Angeles	15.8	13.6	12.7
	Miami	12.7	10.1	13.6
	Minneapolis	-	-	8.9
	Montreal	5.9	7.3	6.0
	New York	14.7	-	9.8
	Philadelphia	-	-	-
	Portland	-	-	-
	San Diego	15.6	-	13.1
	San Francisco	-	-	12.1
	Seattle	-	-	-
	Toronto	5.6	5.7	7.6
	Vancouver	8.7	6.6	8.3
	Washington DC	11.2	-	-

= 10 lowest long-term volatility scor
= 10 highest long-term volatility sco

*Volatilty scores are based on 10-year standard deviations of total returns, 2002-2011
Source: IPD Global Cities Report 2011

Finally, looking back at the past decade, how did cities like London and New York perform over the long haul through more than one cycle? True, both markets share about the same level of volatility, but for this level of risk exposure, New York provided a significantly higher annualized total return (9.9% vs. 7.5% in London). The start of this 10-year period effectively captures the recovery side of the technology bust that occurred early in the last decade. This may help explain why San Francisco's return/risk relationship appears stronger than either New York or London. Similarly, the cities in the best return/risk positions—Calgary, Perth, Johannesburg, Cape Town—reflect only the implied upside of the global commodities boom. Should this boom find an abrupt end, these return/risk relationships may change. One need only look at Dublin to see how dramatic such fallout can be.

Exhibit 14: Total Returns By City



Source: IPD Global Cities Report 2011

Exhibit 15: Return/Risk Relationships For Global City Property

Source: IPD Global Cities Report 2011

4. Conclusion

The IPD Global Cities Report summarizes the key analytical findings from IPD's database of real estate performance worldwide. In this second annual analysis of 60 cities, we find wide performance variation across cities, property sectors, and components of total return suggesting that multinational investors can find significant diversification benefits in their real estate portfolios. There were also opportunities for positive returns to be found by investors throughout the economic downturn due to the unique drivers of performance in each market. In some markets, aggregated data can sometimes mislead or misinform portfolio decisions as All Property returns can mask opportunities (such as the retail sector in Warsaw) or disguise hidden risks (like the office sector in Atlanta).

It is in this context that the benchmarking of portfolios across global markets can be of such value to business leaders and risk managers. Such benchmarking provides insights into the structural drivers of performance and, more specifically, the effectiveness of strategic allocations across cities and property sectors. Property-specific decisions are critical but strategic choices do, as clearly demonstrated throughout this paper, have significant impacts on performance. Benchmarking provides the diagnostic insights into the effectiveness of these strategic choices.

Property portfolios are often structured with a mix of stable and volatile performing markets. Tactical positioning encourages investors to sell when volatile markets overheat and to buy when those same markets crash. This overall strategy works when changes are cyclical and somewhat predicable (like London and New York), but can be less effective when changes are structural. For readers of this annual update of the IPD Global Cities Report, we hope it sheds light on the real estate cycle as well as those hidden structural impediments that can foil an investment strategy.

Author Bio

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Investment Property Databank (IPD) is a global information business, dedicated to the objective, independent measurement of commercial real estate performance. IPD offers a full suite of services including research, reporting, benchmarking, indices and conferences to sophisticated investment managers and plan sponsors with large commercial real estate portfolios.

IPD enjoys relationships with major real estate managers and investors in 25 countries on four continents. It currently works with over 600 clients, including 28 of the 30 largest global investors and managers, encompassing institutional investors, listed and non-listed REITs, sovereign wealth funds, government agencies, central banks, money center banks and private investors. Globally, IPD covers 1,600 funds and 70,000 assets with an aggregate value over $2 trillion.

The Outlook for Alternative Investments

Mark J.P. Anson, PhD, CFA, CAIA, Managing Partner at Oak Hill Investment Management, LP.
Keith H. Black, PhD, CFA, CAIA, Director of Curriculum, CAIA Association
Galen Burghardt, PhD, Senior Director of Research for Newedge USA, LLC
Donald R. Chambers, PhD, CAIA, Associate Director of Curriculum, CAIA Association
Francois-Serge Lhabitant, PhD, CEO and CIO of Kedge Capital
Jim Liew, PhD, CEO of JKL Capital Management, LLC
Pierre-Yves Mathonet, Head of the private equity risk management division of the European Investment Fund
David F. McCarthy, PhD, Principal of D.F. McCarthy LLC
Thomas Meyer, co-founder of LDS Partners

Keith Black: CAIA is pleased to announce the second edition of the textbook for the Level II exams: Advanced Core Topics in Alternative Investments. This book will be published in September 2012, and will be required reading for the March 2013 Level II exam. Given that alternative investment markets change quickly, CAIA regularly revises the required readings. The book was edited by Keith Black, Donald R. Chambers, and Hossein Kazemi, with contributions from a number of other authors, including Mark Anson, Jim Liew, Francois-Serge Lhabitant, David McCarthy, Galen Burghardt, Thomas Meyer and Pierre-Yves Mathonet. The interview below reflects the ever-changing nature of alternative investments and highlights the themes most important within each sector.

Given that you have a broad interest in alternative investments, do you have one particular area (hedge funds, private equity, real assets, etc.) that has interesting recent developments?

Mark Anson: The secondary market for HF, PE and RE funds. We have found that there is a lot of structural alpha offered right now in buying secondary interests in HF, PE, and RE. For a well-diversified HFOF, we seek an absolute return (NOT a LIBOR pegged return) of +8% with equity, FI, and credit betas of 0.4, 0.2, and 0.4.

Keith Black: It has been interesting to see the growth of real assets in investor portfolios. In 2003, infrastructure and commodity assets likely totaled less than $20 billion. Recently, Preqin estimated infrastructure assets at $174 billion while Barclays estimates the size of the commodity market at over $420 billion. Commodities have been increasingly offered in the format of exchange-traded products, which have raised over $200 billion, much of which is from retail investors. There is a concern, however, that the increased flows into commodity investments may move commodities toward financial assets, which is a concern if there is a permanently increased correlation between commodity markets and equity markets, as this would impair the diversification potential of commodity investments.

What are the most important recent developments in hedge funds? What forecasts do you have for the coming 1, 3 and/or 5 years regarding hedge funds?

Jim Liew: There appears to be less evidence that established, larger managers can consistently deliver alpha on an increased asset base. The markets continue to be more efficient than hedge fund managers would lead investors to believe. Capacity-constrained alpha provides the best risk-return ratio. Nonetheless, larger liquid strategies are readily marketed to investors. Additionally, it appears that larger hedge funds are leveraging their own brand names and strong operational infrastructure to offer long-only complementary products. As hedge funds struggle to survive, one successful strategy is to morph into an asset management company with multiple mutual fund-type products. The race for asset gathering will continue as mutual funds and hedge funds converge.

Francois Lhabitant: The number of hedge funds has grown exponentially and they are now openly marketed to retail investors, for instance under the UCITS or managed accounts formats. Institutional investors are also increasingly interested, but they want a high level of liquidity and transparency. As a result, for many hedge funds, asset gathering seems

to be more important than generating risk-controlled performance. Not surprisingly, since alpha is a zero sum game minus fees, the average performance of the hedge fund industry has been disappointing and is likely to remain disappointing. The increased regulation of investment banks has dramatically transformed the hedge fund landscape, and this will continue. For instance, many teams are leaving proprietary trading desks to create hedge funds. So far, they easily raise assets, but few have been successful from a performance perspective. On a forward-looking basis, the debt crisis in Europe presents a plethora of investing opportunities for hedge funds, provided they can lock up capital for longer periods.

What are the most important recent developments in managed futures? What forecasts do you have for the coming 1, 3 and/or 5 years regarding managed futures?

David McCarthy: One of the most interesting recent developments regarding managed futures is their increasing availability through mutual funds in the U.S. Both single-manager and multi-manager mutual funds have been launched in the past few years and their AUM growth has been quite remarkable. It's not clear if this is a "buyer demand" or "seller push" phenomenon. Time will tell. Performance has not been particularly attractive for many of these funds since launch. But, performance across the entire industry has been lacking over the same time period. So, this performance issue is not really a function of the fund structure, per se. Also, there are very significant regulatory reviews of these (and other products using derivatives) underway in the U.S. The ability to offer these mutual fund products, in a reasonably similar form to a traditional managed futures product, may also change in the future. But, if the regulatory issues can be worked out, I would expect this to be a fast-growing area and present significant challenges and opportunities to the industry over the next three to five years.

Galen Burghardt: It depends on what you mean by recent. To my mind, the experience of 2008 and 2009 was a great crucible for testing the claim of zero correlation between CTA returns and those on stocks and bonds. The increased pressure on the industry's fee structure is also a real hurdle for many institutional investors.

What are the most important recent developments in private equity? What forecasts do you have for the coming 1, 3 and/or 5 years regarding private equity?

Thomas Meyer and Pierre-Yves Mathonet: As a matter of clarification, Pierre-Yves and I look at private equity mainly from the institutional perspective, i.e., investors who as limited partners build up portfolios of funds. Many now believe that the private equity industry's best days are over. Arguably this industry became a victim of its own successes where the very benevolent environment investors had been facing until 2008 – with expectations that high returns be virtually assured – has eroded incentives for financial institutions to critically look at their approaches to managing this activity and particularly understanding its risks. Moreover, at least in our view, the industry has attracted too much money, too quickly and from too many institutions that are unfamiliar with this asset class and neither have the profile nor the skills to become successful here.

Regarding the "coming 1, 3 and/or 5 years" forecast, we feel almost provoked. For limited partners this is a very long-term asset class, and the short-termism and the attempts to bring a trader's mentality to private equity – e.g., through exaggerated claims regarding secondary opportunities – has been THE problem bugging the industry. Take, for example, the recurring discussions about the limited partnership model as the dominant investment vehicle to be broken and destined to disappear. Here fund managers complain that periodic fundraising requires a too substantial amount of time and resources which could be better spent on sourcing and making investments. Investors have also expressed concerns, albeit from the opposite angle. The apparently high level of management fees plus locking up capital for a period of ten years or more play a key role in this regard.

Such sweeping conclusions appear to be based on too few facts and little reflection. However, we are convinced that refining the understanding of the limited partner's investment process is the key to unlocking the true potential of this asset class. In the case of venture capital, a very recent paper by the Kauffman Foundation has argued that investment committees and trustees should shoulder blame for the broken limited partner investment model, as they created the conditions for the chronic misallocation of capital. We do not know whether private equity will take this course over the next five years, but we see a smaller asset class with more sophisticated and ultimately consistently successful limited partners. Training and education will play a strong role here. (http://www.kauffman.org/newsroom/institutional-limited-partners-must-accept-blame-for-poor-long-term-returns-from-venture-capital.aspx)

How has the financial crisis affected the real estate and structured product markets? What opportunities has this created for investors?

Don Chambers: The financial crisis that began in 2007 has brought tremendous change and uncertainty to institutional real estate investing. Institutional real estate investors should focus on the continuing effects of the financial crisis to locate and analyze opportunities. Take, for example, the U.S. commercial real estate market. After reaching peak values in 2007 and plummeting through 2009, U.S. property values have partially recovered. These huge value swings have generated interesting opportunities. Many properties that were financed near the market peak of 2007 now have maturing loans due to five-year balloon payments. Investors are struggling to roll the mortgages as the paper comes due.

Mark K. Bhasin, Vice President of Basis Investment Group in New York (and a CAIA member), provides an example: consider a $50 million deal financed with a $40 million mortgage in 2007 based on an LTV of 80%. Now the property is worth perhaps only $40 million and the mortgage is due because of a balloon payment. The new and lower value of the property might only support a $28 million senior loan due to both the declining real estate value and a lower typical LTV of perhaps 70%. The owner may have sufficient cash to meet the gap between the balloon payment on the mortgage and the size of the new senior mortgage or may seek a discounted payoff (DPO) from the lender.

But another possibility is the use of mezzanine financing. Bhasin believes that investors seeking 10-15% returns may find attractive opportunities by providing mezzanine loans or preferred equity to expand the total financing from the 70% LTV of the new mortgage to a total of perhaps 85% financing using the mezzanine funds. These opportunities are likely to remain available for a few years as other mortgages come due and as borrowers who have received loan extensions seek exits.

A similar opportunity generated by the financial collapse arises from the increased demand for and reduced supply of bridge financing. A bridge loan can be used, for example, to finance a project that is being stabilized so that it can be brought to market as a core property. Perhaps the goal is to bring occupancy up from low level such as 60% to a stabilized level of 95%. The collapse of the CDO market for such financing may open up opportunities or investors to provide the bridge financing directly through lines of credit. In effect, institutional investors may be switching from bridge loans embedded in CDOs to direct financing.

As the financial crisis rolls through Europe and perhaps elsewhere, investors may increasingly seek opportunities through cross-border investments. Having experienced the financial crisis first in the U.S., institutional investors may

find opportunities from applying their experiences in markets facing stresses on a delayed basis. In effect, cross-border investing now offers real estate investors the opportunity to market-time the effects of financial crises as they vary throughout the world both in timing and magnitude.

More broadly, what are the most important recent developments for alternative investments as a whole? What forecasts do you have for the coming 1, 3 and/or 5 years for the alternative investment industry?

Thomas Meyer and Pierre-Yves Mathonet: Regulation, Basel III and for Europeans Solvency II spring to mind, Regulation has always been perceived as a major threat to alternative assets in general. However, financial regulation can also offer opportunities. Alternative assets, certainly private equity in particular, have always argued with consistent out-performance compared to traditional assets which going forward is becoming increasingly difficult to substantiate. But in our experience, the risk / return relationship for diversified and well-selected portfolios of alternative asset funds can be highly attractive. To make this point the risks inherent in these activities need to be quantified – which at least in private equity was never done so far. Only recently, the European Private Equity and Venture Capital Association has initiated a project on industry guidelines (where Pierre-Yves and I were members of the working group) to measure the financial risks of private equity funds.

Determining, say, a value-at-risk for a portfolio of alternative assets requires significant investments in financial modelling and information technology which many institutional investors so far were not prepared to do. However, the trend towards a more "technical" management, embedding alternative assets in a strategic asset allocation and asset liability management becomes unstoppable. It will not be sufficient to say "we are good in selecting fund managers." Finally, the lines between alternative assets get increasingly blurred. It is less and less possible to operate as private equity / real estate / hedge fund specialist – investors need to know how these assets interact and who they can be best combined.

Jim Liew: Managed account platforms are a perfect way to plug the gap between weak operations of newly started hedge funds and the strong confidence in reducing operational/fraud risks. They appear to be the right venue to examine new managers for institutional investors and sovereign wealth funds who may venture into smaller managers with limited track-records. Additionally, investors are becoming keenly aware the dangers of "over-crowded" strategies and the link between hedge funds and the policies/politics within countries.

Francois Lhabitant: The massive inflows in alternative assets have generated the wrong incentives for many alternative asset managers – not just hedge funds. The typical consequences are: increasing assets under management rather than performance, going public or creating listed vehicles, providing excessive liquidity terms to their investors, getting into crowded trades, and/or venturing into areas where they do not have much expertise.

Mark Anson: The democratization of alternatives. This is a result of the ETF market. But now there is easy/retail access to commodities both in broad baskets as well as individual commodities (gold, silver, platinum, oil, etc.). We continue to see the convergence of alt managers and traditional managers. Alt managers are now offering "fee discount" long-only products, while traditional managers are offering "fee premium" alt products. This convergence will continue. We also see Mega PE managers becoming the new Investment Banks—e.g., Carlyle, TPG, Apollo.

Keith Black: After 2008, there is a definite focus on due diligence, liquidity and tail risk. Investors are moving beyond

simple risk and return statistics to focus on the liquidity and downside risk of investments. In this environment, strategies such as convertible arbitrage suffer, while managed futures, which have both superior liquidity and downside performance, have doubled assets in the last three years.

David McCarthy: Again, the growth in "liquid alternatives" in mutual funds and ETFs is significant. There are a lot of reasons for U.S. investors to be interested in these—liquidity, 1099's rather than K1's, greater transparency. There are challenges as well: there are regulatory reviews here, as in managed futures; some strategies won't lend themselves to daily liquidity; other strategies may not be able to achieve similar leverage as in a private offering. But, many common alternative investment strategies (e.g., long/short equity) may be completely appropriate in a liquid form. It will be interesting to track their relative performance against the same strategies in traditional LP structures.

Galen Burghardt: A number of things are coming together in an interesting way. Institutional investors -- and pension funds in particular -- have to come to grips with the fact that bonds cannot repeat their performance of the past 30 years. And stocks, while they may yet produce the risk premiums for which they are conventionally known, have shown themselves to be far riskier than conventional volatility measures show them to be. The two massive and extended drawdowns that equity investors have experienced since 2000 were very telling. Against this backdrop, managed futures have been maturing as a promising and respectable form of investment. With $300 billion and more under management, and with business operations that make them look like real money managers, the industry's chances for growth are really quite promising.

How sustainable is the HFOF model? 10 years ago, the HFOF industry sold itself on "access"—that they had better access to HF managers. This is no longer the case. So HFOF now sell risk management, performance reporting, and performance attribution. But, is there any return alpha associated with a HFOF now a days?

Jim Liew: Hedge funds have become mainstream. The broad public knows the faces and names of the largest hedge fund managers thanks in large part to CNBC, Bloomberg, social media, and other sources. As such, no longer can access be marketed as an advantage. The hedge fund of funds vehicles are coming to an eventual end. Currently, institutional investors can easily identify the largest managers with long histories and strong operational infra-structure. Moreover, popular hedge fund underlying strategies currently employed are generally well-understood.

Why do institutional investors continue to herd when investing in hedge funds? Why is it so difficult to create hedge fund benchmark products?

Why don't the consultants create a ratio that measures how much the hedge fund manager has made for themselves over how much they have made for their investors? We should call it the "Me vs. You" ratio.

Keith Black: That's quite a few questions you have, Jim. Unfortunately, I think that institutional investors focus on recent returns rather than the bundle of risk factors that their hedge fund investment adds to their portfolio. Specifically, investors were disappointed in 2008, when market neutral arbitrage products posted large negative returns due to the exposure to liquidity and leverage risks.

Hedge fund benchmarking is quite difficult. To date, the efforts have been focused on peer universes, which, at

a minimum, suffer from self-selection and backfill biases. Given that there are thousands of hedge funds, many of which have high minimum investments or are closed to new investors, it is not feasible to invest in the universe of hedge funds. Factor-based hedge fund replication products do not adequately track the hedge fund universe, as liquid factor-based investments can't replicate the liquidity risk, complexity risk and event risk that contribute a substantial portion of hedge fund returns.

Jim, I think there is a growing awareness of the fee burden of hedge funds, especially in the funds of funds space. At the institutional level, there is substantial fee compression in hedge funds. Large investors who can invest $10 million to $50 million in a single fund have substantial bargaining power on the terms of the fund.

Shouldn't regulators focus on protecting non-sophisticated investors from venturing into alternative investments?

Thomas Meyer: I totally agree, but I do not have the impression that regulatory philosophy is developing in this direction. The thrust of regulation like the AIFMD is making alternative assets "safe" which is almost comparable to the attempt to increase safety standards in Formula One by requiring a first aid kit and a spare tire on board every racing car. This approach to regulate risk out of alternatives is counterproductive and almost absurd. Rather than trying to make alternatives "safe" the right approach would be making sure that the investors in this asset class have the right skills, profile, processes, systems and resources - to stay with the analogy, are qualified Formula One drivers instead of somebody with my driving skills.

Francois Lhabitant: Thomas' comment is straight to the point - funny enough, I often use the same analogy in my classes as well.

In the U.S., it seems to me that the investor sophistication has historically been associated with wealth and level of income, with - I suppose - the idea that if you are wealthy, you can at least pay an advisor that is sophisticated. In Europe, this is not the case. As an illustration, my group is running a $7 billion portfolio in alternatives, but we are legally considered as non-sophisticated in Switzerland and therefore not able to participate in hedge fund private placement discussions locally. Move to London, and then we are sophisticated investors. Isn't that stupid? Now, if you label the same fund UCITS, then anybody can buy it, whatever the content.

In my opinion, UCITS should go back to their roots and cover basic long-only plain-vanilla mutual funds. Then there should be another category (possibly more than one) for more sophisticated investors and products such as HF, PE, etc.

An interesting idea might be to make the alternative product seller/product manager liable for losses if the product has been mis-sold or the investor was not able to fully understand the risks. That would severely limit asset gathering from the masses, but would ensure the protection of the retail investors.

David McCarthy: I think one needs to focus on which risks regulators should address. I'm sure we all agree that: markets should be fair; counterparties, clearing houses, and exchanges need to have sufficient resources to meet obligations; and firms must report accurate pricing to their investors. With insider trading scandals, failures of brokers, and manager frauds, one can make a case that the implementation of current regulations needs significant improvement.

But, I have always been uncomfortable with regulating the kinds of investors who can access various investment products. Francois mentions limiting UCITS (and I would assume, by extension, mutual funds in the U.S.) to plain-vanilla long-only strategies. Recall, though, that natural resource equities and EM equities both fell by more than 60% during 2008. Why is it OK for unsophisticated investors to buy mutual funds/UCITS in these areas, but not have access to liquid long/short funds?

I think it is interesting, and counterintuitive, that many strategies embraced by "sophisticated" investors because of their risk characteristics are off-limits to retail investors. I don't think that is a good idea or a productive regulatory focus.

I realize that I am talking my own bias, but I can't imagine making a long-only equity investment today without pairing it, in some proportion, with a diversified managed futures investment. While I want long-only equity exposure, the risk on a standalone basis seems too great to me. Frankly, I don't think this concept is too sophisticated for RIA's and many individual investors. And I am heartened by the launch of liquid products in this area. I only hope the regulatory door doesn't shut on them.

Jim Liew: This is a very interesting discussion. I generally agree with David, but would like to extend his idea. Why not combine a typical long/short (value) based manager with a nice medium-term trend-following strategy? Wouldn't it be nice to get some "Tigers" (and Cubs) and combine them with some good "Turtles" to create the "Tiger-Turtle" Fund? Capacity would definitely be there.

In my view, trend-following provides the nice down-side protection needed when the overall market turns over. Exactly when the long/short manager's beta is increasing on the downside and the market is tanking, you've got a reasonably good hedge coming on line. Moreover, some could argue that this is less expensive than buying protective puts.

As for disclosures, I'm of the school of thought that regulators should do what Arthur Levitt did in the mutual fund industry some time ago. That is, to make all disclosures easy to understand for the lay person, i.e., get rid all the legalese/jargon. Unfortunately, I don't think what HF managers do is that difficult to understand. It's just the language they use and the "smoke-screen" they put up that makes it confusing to many.

There is a bit of a contradiction here, since if you really do have alpha, you shouldn't go around disclosing it to everyone. True alpha should be protected at all times. Unfortunately, the consultants and institutional investors have been led to believe in transparency at all costs. This doesn't make any sense to me. How can you have an "edge" if you are telling everyone what it is? The market is very efficient and people will trade your advantage, if it does work. With so many people trading it, the alpha will quickly go away according to Fama.

My question is: Shouldn't a fiduciary responsibility include keeping quiet and protecting the alpha you're generating for your client? Isn't too much loud-transparency actually a bad thing?

Francois Lhabitant: I agree with David. In fact, I would personally NEVER invest in long-only strategies, as I believe in risk controls and being able to combine long and short positions is a way to lower risk. The issue is that many regulators, particularly in Europe, do not have the same opinion. They are fine if investors lose 60% in a long-only mutual fund, but find it unacceptable if a hedge fund is down 10%. Plus they see long and shorts as leverage rather than as risk reduction.

Now, in my opinion, regulators should primarily ensure that small investors are protected. The difficulty is that well run hedge funds are actually safer than many long-only mutual funds, but they are also more complex to understand, analyze and due diligence, and less regulated. Opening the door to all investors - which is desirable

in theory - would allow all the crooks to sell their funds to retail investors. Not opening it will make retail investor portfolios worse. Regulating hedge funds massively (like they do in Europe) will kill the goose with the golden eggs. Just requiring a registration and some forms to be filled annually will not be effective - just remember Madoff.

Thomas Meyer: David's comments really show the divide in philosophies. I think that how people think about this question depends on how relevant the retail market is for them. If retail investors come in directly, regulators have no choice but to standardize the investment vehicles and impose restrictions, in other words, to a large degree take the "alternative" out of these assets. My bias is clearly private equity where the attempts to make this asset class liquid and to attract retail investors have arguably not been met with great success. It is not about denying access to this asset class to retail investors, but about making sure that they involve intermediaries who know what they are doing and who can properly monitor and assess the development of the funds over several years. Regulating differently according to type of investors does not strike me as radical as you see comparable approaches in many strands of life.

David McCarthy: I think Tom hits on an important point here--the private equity model. I've often thought that there are two equally problematic aspects of typical hedge fund investing. The first relates to hedge funds investing in liquid securities (e.g., most long/short strategies, managed futures) and offering something like quarterly (or worse) liquidity. These strategies could certainly be offered with daily liquidity. The second relates to other hedge fund strategies (e.g. some RV strategies) often also offering quarterly liquidity. As we learned in 1994, 1998, 2008, many of these strategies require far less liquid terms--more like private equity terms.

My best guess is that we will see the hedge fund industry break down on liquidity lines over the next 5 to 10 years. The liquid strategies will be increasingly offered in UCITS/mutual fund form, and therefore be accessible to retail investors. And the (actually) less liquid strategies will be offered in far less liquid form than they are today and will generally be available only to "sophisticated" or institutional investors.

I think Tom correctly notes the importance of the regulatory discussion in all of this. If the regulators issue rules that substantively diminish the "alternative" characteristic of the liquid alternative products, then you can ignore everything above. But it is not clear that they will. And, in the meantime, new liquid alternative products are announced almost every day and asset growth in the area has been quite remarkable.

How is the industry going to restore its reputation for impeccable risk management and financial rectitude? It seems to me that many of our key players are losing their focus on the things that have made us model citizens in the otherwise sleazy world of financial intermediation. MF Global? Peregrine? LIBOR manipulation? Good grief.

Keith Black: As a former floor trader, I was always trained that the counterparty risk in exchange-traded products was almost non-existent, especially when compared to OTC products. My faith in this assumption has now been shattered. Now, investors need to be concerned about asset segregation and the specific custody arrangement, which can vary by broker, FCM, country and legal arrangement.

It seems that the MF Global incident was related to the low risk-free rates in the U.S., as the FCM was reaching for yield by investing in European sovereign debt. Investors need to understand the business model of their service providers, as what appears to be a low-fee service may give the service provider the perverse incentive to take risk or cut corners in other areas.

Biographies

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Keith H. Black, PhD, CFA, CAIA, has over 20 years of financial market experience, serving approximately half of that time as an academic and half as a trader and consultant to institutional investors. He currently serves as Director of Curriculum for the CAIA Association. During his most recent role at Ennis Knupp + Associates, he advised foundations, endowments, and pension funds on their asset allocation and manager selection strategies in hedge funds, commodities, and managed futures. Dr. Black previously served as an assistant professor and senior lecturer at the Illinois Institute of Technology's Stuart School of Business. He was a member of the inaugural class of the Chartered Alternative Investment Analyst (CAIA) candidates.

Galen Burghardt, PhD, is Senior Director of Research for Newedge USA, LLC, a joint venture between Calyon and Societe Generale. He is the lead author of *The Treasury Bond Basis and The Eurodollar Futures and Options Handbook*, which are standard texts for users of financial futures. His latest book, written with Brian Walls, is *Managed Futures for Institutional Investors: Analysis and Portfolio Construction* (Bloomberg/Wiley, 2011). His PhD in economics is from the University of Washington in Seattle.

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Alternative Investments Roundtable

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Thomas Meyer is a co-founder of LDS Partners, an advisory firm providing solutions for liquidity, portfolio, and risk management for institutional investors in private equity funds. After 12 years in the German Air Force, Thomas worked for the German insurance group Allianz AG in corporate finance and as the regional chief financial officer of Allianz Asia Pacific in Singapore. He was responsible for the creation of the risk management function at the European Investment Fund. He is a Shimomura Fellow of the Development Bank of Japan and was a visiting researcher at Hitotsubashi University in Tokyo and a director of the European Private Equity and Venture Capital Association. Dr. Meyer co-authored a series of books (e.g., *Beyond the J-Curve* and *J-Curve Exposure*)

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