



# Greenwich Roundtable

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Case Studies

## BEST PRACTICES IN ALTERNATIVE INVESTING: AVOIDING MISTAKES



## ABOUT THE GREENWICH ROUNDTABLE

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The Greenwich Roundtable, Inc. is a not-for-profit research and educational organization located in Greenwich, Connecticut, for investors who allocate capital to alternative investments. It is operated in the spirit of an intellectual cooperative for the alternative investment community. Its 150 members are mostly institutional and private investors, who collectively control \$2.2 trillion in assets.

The purpose of the Greenwich Roundtable is to discuss and provide current, cutting-edge information on non-traditional investing. Our mission is to reveal the essence of both trusted and new investing styles and to create a code of best practices for the alternative investor.

The Research Council enables the Greenwich Roundtable to host the broadest range of investigation into the best practices in investing in alternative assets. Members of the Research Council not only provide no-strings funding but also assist the members of our Education Committee.

The Education Committee works as a group of altruistic investors who contribute their time and experience to raise professional standards. The final result is intended to demystify alternative investing and to bring about greater understanding. Investing in alternatives is not well documented. The Education Committee is chartered to conduct original research and develop best practices from the investors' point of view.



## LETTER FROM THE CHAIRMAN

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As we complete our latest *Best Practices*, I am touched by the dedication and contribution of so many participants, especially our Education Committee. They have worked tirelessly outside of their day jobs because of their desire to help Limited Partners (LPs) avoid mistakes that detract from their returns. I am extremely grateful for their efforts, which turned this idea into reality.

Special acknowledgement is deserved for Rusty Olson, who has edited three prior *Best Practices* pieces and was the writer for “Avoiding Mistakes.” Rusty was able to weave together the knowledge and insight of all our contributors in a concise, usable form along with his own insights from nearly 40 years of being a student and practitioner in the markets.

“Avoiding Mistakes” has been contemplated for many years as an addition to our *Best Practices* series, which has centered on the up-front manager selection due diligence and portfolio construction processes. This piece takes an original and more practical approach than found in media reports as it moves beyond the headlines to examine warning signs of potential trouble in funds, yellow and red flags that investors need to consider in their diligence and monitoring processes.

It is the responsibility of investors to protect their assets, just as it’s the responsibility of a pilot to avoid getting caught in the middle of a thunderhead or putting a plane into a stall. Our intent is to focus on what LPs should be looking for and what actions they can take to limit the risks of failure. Many of these warning signals are subtle, not all funds with warnings are bad funds. Often it’s the combination of warnings that is most telling.

The piece is intentionally written in a clinical form, avoiding sensationalism. Similar to safety guidance in other industries, our goal is for this white paper to be used by LPs to reduce their accident rates. Unfortunately, this issue is timeless. While one may expect investors and managers to learn from past mistakes, the market is organic, with history often repeating itself.

Lastly, we are extremely grateful to the members of our Research Council, which supports our efforts to educate investors about both the opportunities and challenges of investing in alternatives. They believe that better informed investors help create an industry composed of higher quality managers, which is an outcome that benefits everyone.

Mark Silverstein  
*Chairman, Education Committee*



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### NOTES

This white paper uses “we” or “investors” as all-encompassing terms to include endowment funds, pension funds, foundations, insurance companies, and private family investors—the limited partners in hedge funds and in private investment funds. These are the investors for whom this paper was written. Throughout this white paper in referring to a person, we have used the masculine pronoun. In all such cases, the “he” is used in the classical sense as shorthand to designate *he or she*. Clearly, investing is every bit as much a woman’s world as a man’s world. But we prefer to avoid the imprecision of modern usage, such as “each person does their own thing.”

## INTRODUCTION

Over the past decade, sophisticated investors have seen that alternative assets can offer attractive risk/return opportunities compared with traditional investments. Yet many investors have been the victims of a hedge fund that has suddenly self-destructed for a range of reasons, causing those investors large losses. The press focuses on sensational blow-ups such as the Madoff case, but there have been many other far more complicated accidents. How can investors avoid them?

We were inspired to pursue this white paper by two classic publications:

- Charles Ellis’s brilliant handbook, *Winning the Loser’s Game*, which emphasizes “avoiding mistakes.” Avoiding mistakes in alternative investments is crucial in order to allow the rest of the portfolio to keep compounding, and to avoid the embarrassment and career risk of having to explain to constituents “why we chose that fund.”
- The publication *Accidents in North American Mountaineering*, by the American Alpine Club. It analyzes each climbing accident in a disciplined, clinical manner without identifying the climbers. This annual publication has helped to cut climbing fatalities in half. Today climbers who decline to read *Accidents* do so at their own peril.

Investing in alternatives is investing in a manager as much as, or more than, in an asset class. There is a wide divergence between top quartile and bottom quartile managers, especially in private markets. Yet even the best managers can find themselves in a “perfect storm” for which they were not prepared. Therefore we must understand the strategy of each of our managers and how they think.

Our best defense is in doing our homework well—the process of investigation prior to manager selection, which we call *due diligence*, and the ongoing maintenance of that investigation after the investment has been made, which we call *manager monitoring*.

The Greenwich Roundtable has over recent years published a series of *Best Practices* publications designed to help investors select and manage their alternative investments successfully. This *Best Practices* paper is focused on how to avoid mistakes through due diligence and manager monitoring. We shall divide the paper into two sections:

- Hedge funds—case studies of hedge funds that have failed, highlighting how we investors could have identified warning signs during our due diligence and manager monitoring processes and thereby minimized the likelihood of our being caught in an accident.
- Private markets—an overview of disappointments in venture capital, buyout funds, and real estate funds, the importance of initial due diligence, and the need to focus investments only in areas where a paucity of capital is presenting exceptional opportunities.

The rewards to managers of alternative assets can be so great that the area attracts not only the world’s best investment managers but also many other managers who are driven mainly by the potentially high fees. This paper is not intended to help investors select the best managers. Its goal is to help investors avoid those funds that drag down the overall returns that investors can earn from their alternative investments.



## AVOIDING MISTAKES IN HEDGE FUNDS

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Many hedge funds were forced to close during the credit crisis and stock market crash of 2008, and we include a number of cases of those funds. But, as you will see in the 22 cases we have included here, there have been instances of fund failures every year, and there are often tangible ways that investors could have avoided them.

Each case includes three sections:

- **Background**—the basic information investors knew about the fund and the manager.
- **What Went Wrong**—the events that caused the fund to fail.
- **Warning Signs**—indicators that limited partners might have heeded to avoid the accident.

Because we are exploring *why*, not *who*, we have in each case omitted the name of the firm and the fund, and in at least one case we have modified the facts slightly to disguise the name. Our effort is to be clinical, not to gossip. Our intent is to review the facts of the case and then focus on underlying principles that we investors can build into our due diligence and manager monitoring disciplines. We point out the questions investors might have asked to identify yellow and red flags that could have led them to avoid or redeem an investment in these funds.

We have organized the cases in chronological order rather than by cause of failure, because some warning signs applied to many different cases. We have flagged warning signs the same as traffic lights—yellow for caution, red for stop. To help readers navigate these cases, we have printed in boldface type some of the key warning signs in each case, and we offer a matrix on page 5 of our 22 cases to show which cases these warning signs applied to.

Avoiding all of these mistakes comes down to conducting due diligence well—both before subscribing to a fund, and continuously as we monitor a fund we've invested in. If we make a wrong call initially, it is difficult to get out. But we can rectify most mistakes if our manager monitoring is timely and thorough.

As you review these accidents, see if you can identify the principles that you as an investor should have built into your standard practices. Based on these cases, we will provide our view on the kinds of protective procedures that we as investors should embrace as part of our due diligence and manager monitoring disciplines.

There is no sure-fire way to avoid participating in a fund that subsequently fails. Although even some of the best investors have been caught, we can do much to make that a lot less likely. We must also recognize that often when warning signs are flashing, the fund does not run into the kinds of events that will do it in.

# A TAXONOMY OF HEDGE FUND ACCIDENTS

		Fund																						
Hedge Fund Warning Signs		A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	
Nature of Problem	Fraud	X	X		X			X		X													X	
	Other			X		X	X		X		X	X	X	X	X	X	X	X	X	X	X	X	X	
Due Diligence	Background Checks									X													X	
	Inadequate Track Record		X				X		X	X														
	Lack of Independent Valuators																					X	X	
	Review Service Providers	X			X			X		X	X												X	
	Inadequate Risk Management	X	X										X	X										
	Hard Sell							X		X		X												
	Understanding Strategy			X				X								X								
	Lack of Key Man Clause								X															
Manager Monitoring	Excessive Leverage		X				X				X	X		X	X	X	X	X	X	X	X	X		
	Liquidity Problems				X						X	X	X		X	X	X	X	X	X	X	X	X	
	Inadequate Risk Management			X			X		X		X	X	X		X		X				X		X	
	Too Much Concentration			X						X			X				X							
	Unreasonable Volatility		X							X	X					X		X					X	
	Inadequate Transparency	X		X				X			X	X	X		X							X		
	Hubris			X									X			X								
	Inexplicable Performance							X															X	X
	Strategy Drift					X					X			X				X						
	Grew Too Much										X		X										X	
	Danger of LP Redemptions								X															
	Ongoing Background Checks				X			X																
	Backoffice Problems	X			X			X															X	X
	Internal Staff Dynamics					X		X																

**Background**

**Fund A A Bet Against the Bubble**

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In 1996 a young manager started up Fund A with money from investors who wanted to bet against the growing bubble in high technology stocks as insurance against a market downturn. Over the next four years the manager raised nearly \$600 million, as the fund's reported returns reached more than 25% in a year.

The fund had little staffing, as the founder carried out most functions himself. The auditor, a leading international CPA firm, gave unqualified opinions on the audited statements, based on records maintained by the fund and reviewed by the administrator, a recognized offshore administrative firm.

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**What Went Wrong**

Early in 2000 the manager sent a letter to shareholders stating that the financial statements of the fund that had been distributed over the last several years were inaccurate and that the fund's actual net assets were substantially less than those previously reported. Four days later the SEC brought a civil suit against the fund and its manager, and subsequently a criminal suit was commenced.

creating false financial records. Every month for 39 months the manager forwarded a fictitious statement of assets to the fund's offshore administrator, who then calculated the fund's net asset value and the value of each investor's shares. The manager also sent the fictitious statements to the auditor. In actuality, the fund consistently suffered losses that ultimately totaled nearly \$400 million.

Shortly after opening in 1996, the fund lost money by shorting technology stocks, but the manager began systematically hiding those losses from investors. The SEC found that the manager defrauded investors by

The manager of the fund was ordered to pay back \$20 million in management and incentive fees (plus interest) that he had charged investors, and the manager pleaded guilty to criminal charges.



Most investors subscribed to the fund to guard against losses in high-flying technology stocks, but they might have questioned how the short-biased fund was able to show good returns when the high flyers kept flying. Reports to LPs (limited partners) did not explain this—a red flag. ***A fund's performance should be understandable, given its strategy.***

***The fund was managed by one person with no risk manager*** or other support, much less a risk manager with independent authority. A fund with only a single person running the entire show, with no checks and balances, can much more readily commit fraud than a group of managers and operations personnel who share the responsibility for fund performance and reporting.

Due diligence on the fund's operations and on all service providers would have revealed red flags. The fund did its trading through a small introducing broker (which was controlled by the manager of the fund), who then cleared through a leading prime broker. The prime broker sent accurate statements each month to the offshore administrator, but the fund manager told the administrator to ignore the prime broker's statements, because the prime broker was only one of several clearing brokers. ***Investors would have uncovered the fraud if, in validating service providers, investors had asked the manager the names of prime brokers and verified them with the administrator.***

The leading prime broker came close to catching onto the scheme when one of its managing directors met a fund investor who talked about the fund's glowing returns. The prime broker followed up with the fund manager, who said that it was only one out of eight or nine brokers used by the fund. The prime broker did not follow up by calling the other brokers, but it did raise its margin requirements enough so that ultimately it did not suffer a loss.

Some investors did become concerned and redeemed about \$140 million before the fund collapsed.

## Warning Signs

Background

Fund B Skating Close to the Edge

During the 1990s a trader in the Asian office of a global investment firm was known for making big bets, specifically in Asian stocks with a specialty in convertible arbitrage. After numerous years of good returns he had a terrible year in 1999, creating large losses, and subsequently left the firm.

hedge fund, Fund B, which opened toward the end of 2000 and reached a peak of \$300 million in 2001. The founder brought with him several staffers and software specialists from the investment firm where he had previously worked.

In the spring of 2000 the trader joined a highly successful arbitrage hedge fund. After a few months the fund manager fell ill and was forced to close the fund. The trader took credit for the strong but volatile returns during the fund's last few months, and he convinced many of the fund's investors to subscribe to his new

The founder's investment approach as described in the new fund's offering memorandum left no doubt that his style was high risk. He warned investors to expect substantial borrowing to leverage returns. The new fund was down 24% in 2001, then up 78% in 2002. The fund was managing some \$300 million.

What Went Wrong

In January 2003 the fund disintegrated when it made huge leveraged bets, mainly on three specific Asian stocks. It invested \$1.4 billion on a capital base of only about \$150 million. In two days the fund's NAV plunged nearly 30%.

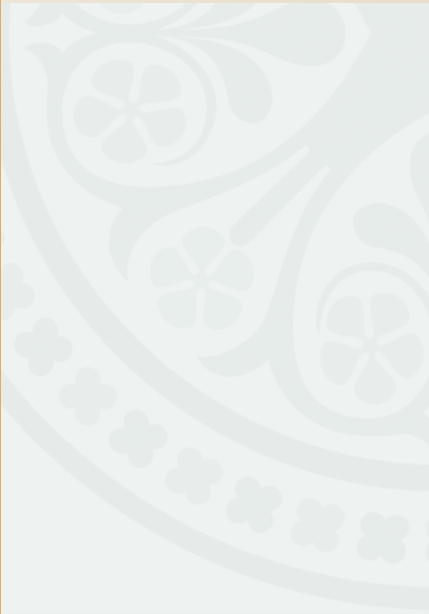
Its prime brokers, to protect their interests, then seized the assets and sold them in a fire sale. In the course of a week the fund lost almost its entire value.

Warning Signs

Many investors apparently skipped many of the basics of due diligence procedures when they invested in this fund. How could investors derive any predictive value from the returns of a manager with **a track record of less than one year**, working with the founder of the prior fund? His track record at the investment bank, if known in full, would have been at least a yellow flag.

Meetings with the manager at his office are a fundamental part of both due diligence and manager monitoring. A trip to the office in Asia to get to know the manager and his staff might well have raised serious concerns about **the fund's risk management and operations**.

**The fund's extreme leverage, concentration, and volatility** should have warned investors of the danger of a collapse. If that information was not provided in the fund's regular investor reports LPs should have insisted on receiving it or else redeemed. **Lack of such transparency would have been a red flag.**



## Fund C Knowing More Than Those Who Make It Their Business

### Background

Fund C traded futures on physical commodities, and at the start of 2003 it managed assets of nearly \$500 million. All commodity traders feel it is important to protect market-sensitive information, and accordingly, the fund avoided revealing its positions in the market. But still the fund was known to be a significant player

in the cocoa market. In fact, one of the fund's selling points to investors was its deep knowledge of the cocoa market. Cocoa beans are used in the manufacture of chocolate.

### What Went Wrong

The fund held very large positions in cocoa futures, a small, relatively illiquid market, where the fund had made large gains in 2002. The size of its holding was large relative to the fund's overall portfolio and, more important, extremely large relative to the overall cocoa market. In late January and February 2003, cocoa prices rose to nearly a 17-year high because of political unrest in the African country where most of the supply originated. But the country's politics stabilized, and the country soon seemed headed toward a larger-than-expected 2003 cocoa harvest, some 25% higher than analysts had projected.

As the price of cocoa futures plummeted, the fund's position in cocoa was too large to unwind, so performance crashed. In fact, the manager had to take delivery. In September and October 2003, after the fund suffered substantial mark-to-market losses, a majority of the fund's LP interests sent in redemption requests. Investors were able to redeem monthly with a short notice period.

After assets dropped to about \$250 million, the fund suspended year-end redemptions. It told investors the fund would suffer an imminent large loss if it had to firesale its large cocoa positions in order to pay redemptions. The fund said it was in its investors' best interests to keep specific information with respect to the fund's composition confidential so that its markets were not aware of how or when the fund was disposing of positions. The fund added exposure to some of the principal markets in which it participated and affirmed that the fund continued as a going concern. Subsequently, investors went through an extended legal hassle, and they never recovered their principal.

Before an investor enters any fund **he should understand the strategy and the risks in its markets.** For a CTA<sup>1</sup> fund that focuses on physical futures, he should know that the market for some commodities, such as cocoa, is limited. There is great risk in holding **a large, concentrated futures position** in such a market, as the fund may have to take delivery of the commodity if it can't find a buyer at an acceptable price.

As the investor investigates **the fund's risk management,** he needs to gain comfort about the fund's diversification, its position limits, and the size of its holdings relative to the markets in which it is trading.

Once invested in such a fund, manager monitoring should include periodic on-site meetings with the manager and its primary traders to ensure that agreed-upon limitations are being duly enforced. A separate meeting with the risk manager, if he exists, should reveal his authority, his independence, and his influence over the portfolio. While reports to LPs did not spell it out, **the dangerous extent of portfolio concentration could have been revealed through conversations with the fund's management.**

One investor was told by one of the fund's two senior officers that he considered himself better positioned and better informed than industry insiders. Investment managers often have deep knowledge of their field, but it is hard to believe that they know more than the people who are directly in the business and have intimate knowledge of the supply side of the market. **It sounded like hubris.** It was later revealed that this officer was not the trader but rather the marketing person. It is important to understand the officer's role and influence over the portfolio regardless of his title or ownership position.

## Warning Signs

<sup>1</sup> Commodity trading advisor

## Fund D The Value Is Whatever I Say It Is

### Background

In 1993 a former Wall Street equity analyst founded a new hedge fund, Fund D. The fund purchased large positions in small, lesser-known thinly traded stocks, and its documents indicated that most of the portfolio was

held at valuations determined by the manager. Assets of the fund reached about \$225 million by the end of 2000, then during the next three years strong returns propelled assets above \$1 billion.

### What Went Wrong

In June 2003 the SEC gained an emergency restraining order freezing all of the fund's assets. It alleged that from 1999 through 2002 the fund had defrauded investors of more than \$200 million. The fund artificially inflated its asset values and investment returns in order to attract new investors, to retain existing ones, and to provide the GP with a windfall through its typical incentive fee of 20% of all gains. The SEC alleged that the fund had bought large quantities of a restricted (non-marketable) stock for pennies, subsequently purchased a smaller number of shares through a broker to drive up the price, and then valued the shares at the higher price.

The head trader for Fund D pleaded guilty to stock-manipulation charges and was sentenced to prison for five years. Two principals of a brokerage firm, who had interests in several "shell" companies in which Fund D was invested, were also indicted for fraud. One pleaded guilty and the other was convicted of conspiracy to commit fraud.

Eventually, the fund's founder faced trial, and the jury deliberated for three days before finding him not guilty of wire fraud and conspiracy. But he nonetheless was ordered to repay more than \$62 million to investors.

### Warning Signs

Investors in the fund should have seen a red flag when they learned that **most of the fund's assets were valued by the fund itself**. One of the first assurances investors should insist on is that a competent independent firm will validate positions. The terms of many hedge funds state that the board of directors or manager has ultimate responsibility for valuations, but investors should make sure that the fund has exercised that responsibility by appointing an independent firm to perform position-level and portfolio valuations. Independent valuations are essential in today's climate of mistrust.

A second concern should have been liquidity—what portion of the portfolio could, in a bad market, be liquidated in two days, a week, or 30 days. A portfolio that includes small, thinly traded stocks might be a sitting duck during periods of market volatility, when steep losses can trigger large investor redemptions. **Investors need to make sure that the fund's strategy is consistent with investors' liquidity terms.**

Also, **it is vital to conduct detailed reference checks on key people**. In September 2002 the fund added an executive directly below the founder who, because of fraudulent conduct while serving as a company president, had been fined and barred from acting as an officer or director for five years.

## Fund E The Fund That Ended in Divorce

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Early in 2001 two people who together for four years had managed a commodities and basic materials portfolio for a large, renowned hedge fund started up their own fund, Fund E. As equal partners, they could each initiate short-term trades, but since the fund was based mainly on longer-term themes, they would agree on longer-term investments. The fund was considered unique among hedge funds that focused on commodity trading. Its fundamentally based managers tended to do a lot of legwork to gather supply and demand data rather than trade on the basis of computer models or technical trading patterns.

The more challenging environment led to disagreements between the two strong-willed managers, while performance—although up some 10% in 2004—continued to lag the commodity index. Rancor between the two managers became so great that in October 2004 they decided to shut down the fund and return money to investors.

While investors didn't lose money on this fund, they were hardly rewarded for all their time and effort in researching the fund, and the break-up of the firm certainly did not enhance the investors' personal reputations.

From the start, the managers' credentials had been good. How could investors have known to avoid the fund? The disputes between the two managers, which surfaced in mid-2004, occurred too late for most investors to react to the situation and to submit redemption requests ahead of the announced liquidation of the fund.

From its launch in 2001 the fund grew by 2004 to about \$1.5 billion. Performance got off to a good start in 2001 but failed to keep pace with the strongly trending commodity indexes in 2002 and 2003.

In early 2004, when commodities markets became more volatile, the managers shifted the fund's strategy away from longer-term themes in favor of more short-term trading with less directional exposure.

In fact, the two partners ultimately sued one another for such things as a general lack of commitment, an abusive management style, and adding personal friends and relatives to the payroll.

Ongoing manager monitoring might have provided clues. ***Investors might have conducted detailed interviews with a variety of the members of the team in an attempt to find points of stress.*** And they might have gotten the two partners together and reviewed with them in some detail how they would resolve inevitable disagreements. This would have been an opportunity for investors to observe and sensitively assess the dynamics between the two partners. In fact, it was rare that both portfolio managers would agree to meet together with investors, and that in itself was a yellow flag.

***The strategy drift in 2004*** to more short-term trading with less directional trading might have been another yellow flag.

### Background

### What Went Wrong

### Warning Signs

## Fund F The Hedge Fund That Didn't Succeed in Hedging

### Background

In April 2003 two analysts of foreign equities left a large prestigious hedge fund organization whose foreign equity fund had achieved outstanding performance in the disastrous years of 2001 and 2002. The analysts, who had been with the firm for two or three years, hired a staff, including an experienced chief operating officer and an experienced chief financial officer, and on July 1 launched a new hedge fund, Fund F.

The fund consisted of equity long/short and event-driven strategies, primarily foreign but also North American. The fund earned about 10% in the last half of 2003, and assets under management grew to \$1.3 billion by the second half of 2004.

### What Went Wrong

Drawdowns starting late 2004 led to redemption requests, which kept coming. To meet those redemptions and margin calls and to reduce their exposure, the managers took profits on positions that previously had worked but which now incurred successive monthly losses in a self-reinforcing cycle. The fund sold some \$2.5 billion between mid-March and mid-May 2005 with losses ranging from 15 to 35%. Because of the fund's transparency, other managers and traders guessed what the fund was doing, and prices of their stocks dropped. By the end of April the fund was down more than 20% from the beginning of the year.

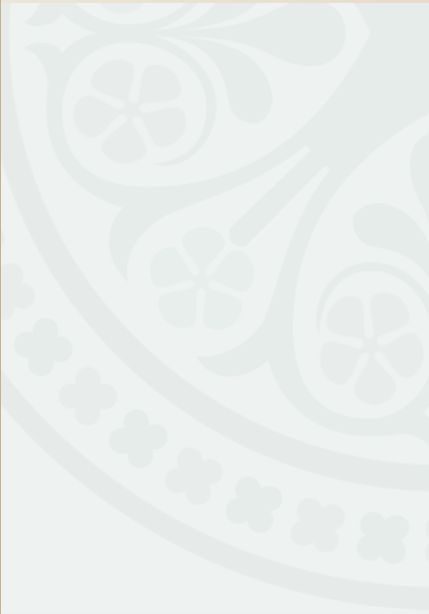
Assets under management dropped from \$1.3 billion to about \$700 million, and heavy losses continued in May. The management decided to shut the fund in June and to return capital to its investors the following month.

### Warning Signs

**Investors made too cursory a review of the principal's track record.** They assumed that after a couple of years as analysts with a spectacularly successful foreign long/short fund, the two founders of Fund F were capable of managing a long/short fund that also invested in North American stocks. That assumption should have raised at least a yellow flag, as *analyzing stocks* and *managing a fund* are two different, although overlapping, skills. Also, the principals' competence at analyzing foreign stocks did not necessarily qualify them in the North American market as well. In fact, their North American investments accounted for a lot of their losses.

**The fund did not have a risk manager who held authority,** another yellow flag. A competent risk manager could have helped the managers understand the mismatch of betas between their long and short positions.





**Background**

Fund G was established at the beginning of 1997 by a trader with 10 years of experience in equity long/short, most recently with a \$4 billion hedge fund. In its first six years Fund G compounded nearly 20% per year with 8% rolling 12-month volatility and .7 rolling 12-month correlation with the MSCI All Country World Index.

The fund provided prospective investors with a due diligence review that spelled out its investment strategy about as completely as that provided by any hedge fund at the time.

The fund invested almost exclusively in the most liquid U.S. listed securities, indexes, and instruments based on proprietary quantitative analytics. It used fundamental inputs, not standard technical models. The fund stated that it had no directional bias. It may be net long or net short at any given time but rarely heavily biased in any direction. The fund used no leverage and maintained flexibility to go to cash, often using very high cash positions. Most of its trades were intraday, with generally a maximum of 30 positions at any one time.

The fund said that tight trailing stops compelled early exits from losing positions and accounted for high turnover. Losses were also limited through the use of options. Portfolio positions were assigned a maximum dollar loss limit before a position was taken. The fund's largest drawdown was 12% over five months in 1997.

Early in 2003 the fund was managing nearly \$150 million of assets and said it had the capacity to manage twice as much. Two years later it was managing about \$450 million. The fund charged no management fee, just a 20% performance fee. Investors could redeem monthly on 15 business days notice.

**What Went Wrong**

After a down year in 1998 the founder and his CFO decided that, rather than disclose the losses to investors, they would falsify the audit and hope to make up the losses in the following years. To carry that out, they used an in-house broker-dealer to execute all trades, and they opened a new auditing firm, in which the principal was the fund's CFO.

Unfortunately, their hope for out-sized returns was just a dream. They continued to lose money and, in 2004, they stopped trading. Over the course of six days in July 2004, the management company withdrew some \$160 million from five bank accounts. The founder and CFO were eventually caught wiring \$100 million overseas.

In September 2005 the Commodity Futures Trading Commission filed a complaint alleging misappropriation and fraud, and the following year the fund filed for Chapter 11. The founder and CFO pleaded guilty on multiple charges. They were both sentenced to 20 years in prison, and the founder was ordered to forfeit \$300 million.

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***If an investor had checked the credentials of the auditor, the conflict of interest would have been a big red flag!***

The terms of the fund, with no management fee and easy redemptions, were so different from industry practice that an investor might have regarded it as a come-on to attract new investors.

***How could a manager do most trades intraday if, as it said, its inputs were fundamental, not technical?*** The manager's investment approach was like a black box—high turnover, heavy intraday trading, little transparency. Reports were heavy on performance, light on portfolio composition. If we don't understand how the firm's fundamental research relates to its short-term trading, then we shouldn't be in the fund.

***Continued manager monitoring about the founder could have uncovered the possibility of character flaws.*** For example, a suit to pay losses in 2001 was dismissed with prejudice. And the manager was named as creditor in four tax liens between 2002 and 2004.

One investor visited the fund's office on two occasions but met mainly with enthusiastic marketers, as the founder always seemed to have very limited availability. The marketing focus and ***lack of openness*** in discussing investments made the investor uncomfortable with what he heard, so he passed on the fund despite what appeared to be a strong track record.

## Warning Signs

**Background**

**Fund H The Conflict of Target Expectations and Conflicts of Interest**

In 1997 a group of option traders established a multi-strategy hedge fund, which grew to more than \$1 billion. In mid-2003 they hired a team of traders with significant experience at merchant energy companies and started up a stand-alone energy hedge fund (Fund H) capitalized with money from the general partner and its multi-strategy fund. By mid-2004 they opened that new fund to outside investors.

The opportunity seemed well timed because Enron, a big player in that market, had dropped out of the picture, reducing competition. The strategy was a good diversifier for institutional portfolios because it had limited correlation with the stock market. The fund employed leverage but at levels that represented a fraction of the leverage that Enron had used.

The fund traded oil, gas, and electricity futures with a relative value strategy, without typically taking directional bets. Because prices in energy markets are so volatile from one region of the U.S. to another as a result of weather and other circumstances, the strategy was to take advantage of relative mispricing on both a fundamental and technical basis.

Investors were offered quarterly redemption with 45 days notice. Because many of the securities were over-the-counter forward contracts with potentially limited liquidity, the fund reserved the right to gate investors if more than 10% of investor capital requested redemptions.

**What Went Wrong**

In 2004, its first full year, the fund earned more than 15%, and it continued to do well until August 2005, when a series of weather-related events, culminating in Hurricane Katrina, led to heavy losses. Katrina knocked out considerable U.S. refining capacity, causing natural gas prices to spike. This resulted in dramatic changes in the relative value relationships across the energy and related markets. As the traders cut risk in the portfolio, they locked in losses.

The fund suffered more losses in September, resulting in a drawdown approaching 20%. Many investors tried to redeem but the fund imposed its gate. A few of the fund's traders left before the end of the year, and most of the original trading team had left by mid-year 2006. Because some of the fund's investments were longer-dated forward contracts and other less liquid or illiquid investments, it took some years for the fund to wind down. Investors eventually received the majority, but far from all, of their September 2005 investment values.

The only way for an investor to have avoided this debacle was to have decided not to invest in the first place. Once trouble arose, it was too late to redeem. Why might an investor have passed on the opportunity?

- The success of the fund would rest on the traders hired by the fund sponsor. The traders were clearly experienced, but **they didn't have a tangible long-term track record** that investors could evaluate.
- The fund's traders were key to the execution of the fund's strategy. **Lack of a key man clause** in the fund's documents was a salient omission.
- The firm's multi-strategy fund was an initial investor in Fund H. **The implicit risk of a large redemption by the multi-strategy fund** in difficult times should have been a yellow flag for investors in the energy fund.

- While the fund would be a good portfolio diversifier, energy futures are a volatile market, and investors should not have been amazed by a 20% drawdown.

**As for the fund's risk control**, just how much of a catastrophe should the fund be expected to withstand? The chances of a Katrina may have been outside the range of risk limits that many investors might have expected.

## Warning Signs

Background

Fund I The Need To Triangulate Credentials

In the late 1990s a person who for six years had been an analyst at a large Wall Street firm began to manage money for a family office, and in February 2003, started up a hedge fund, Fund I. The fund was a long/short equity that reported very strong returns for several years through mid-2005.

What Went Wrong

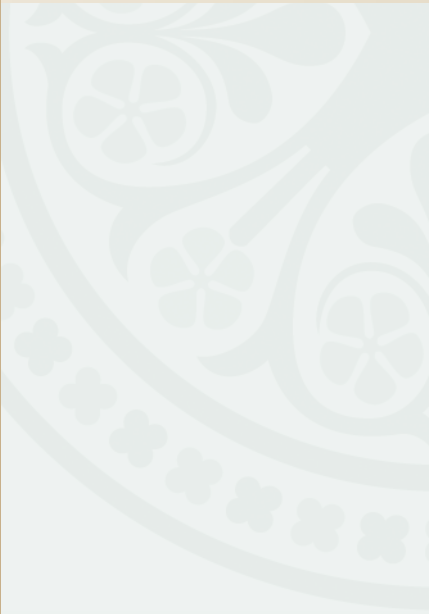
It turned out that the manager had invested 85% of his portfolio in shares of a single, small Silicon Valley firm, owned 80% of that company's outstanding shares, and never reported its large holding to investors—nor to the SEC, as required. In September 2005 one of the manager's separate-account clients became suspicious about trades in that stock and liquidated its holdings, causing a huge drop in the price of the stock—and of the value of the hedge fund. The fund was unable to meet margin calls, and brokers started to liquidate the fund's assets. The fund was unable to pay redemption requests, and it soon went out of business.

Two years later the manager was sentenced to three years in prison for securities fraud related to his investments in that stock.

Warning Signs

The best way to have escaped this fraud was to have avoided investing in the fund in the first place. There were multiple red flags:

- Prior to establishing Fund I, the **manager had minimal accomplishments** with which to instill confidence in investors.
- **The manager had a questionable credit history.** He was sued for failure to pay losses to clients in 2001, defaulted lease payments in 2002 and tax liens in 2002–04—each of them dismissed with or without prejudice. A thorough background check could have uncovered these concerns.
- An investor, upon phoning the announced book-keeper and independent auditor, would have learned that they had no relationship with the fund. The fund kept promising LPs that audited financial statements would be coming, but they never did. **A review of service providers would have revealed the red flag.**
- The firm engaged six outside promoters to market its hedge fund. **Beware of a hard sell**, especially with third-party marketers.
- **Adequate transparency would have revealed** the phenomenal portfolio concentration in a single small stock.



**Background**

Fund J was founded as a multi-strategy fund in 2000, although initially more than half of the fund was devoted to convertible arbitrage. The fund was highly successful, compounding over 20% per year for the three years 2001–03. As convertible arb no longer delivered double digit returns, the fund began emphasizing other strategies. By 2006 convertible arb was down to 2% of the portfolio.

In 2002 the fund hired several former merchant energy traders, and in 2004 it hired someone known for his volatile success in trading natural gas futures. By 2005 some 30% of the fund's portfolio was earmarked for energy trades, and during 2005–06 energy trading accounted for more than 80% of the fund's profits. In fact, the vaunted natural gas trader hired in 2004 became so important that he was able to negotiate an increase in his personal share of his trading profits, and he physically moved some 2,000 miles away.

The fund was touted for its world-class risk management system, as each trading desk was paired physically with a risk manager who measured risk on a daily basis and calculated expected losses for each position. But the fund had no formal stop-losses or concentration limits. Leverage in energy trades ranged from 5x to 8x. And the fund's gas trades came to account for an exceedingly large percentage of gas trading on the NYMEX exchange.

Despite its volatility, energy trading had generated \$3 billion in profits by August 2006, and the fund had grown to about \$9 billion in size.

**What Went Wrong**

In its natural gas trading, the fund based its judgment on the historical spread between futures prices for different months, and it borrowed money to substantially increase its bets. When in September 2006 it became clear that the underlying demand for gas hadn't moved as it had historically, the price spreads narrowed, and the fund's position in the market was much too large for it to get

out. The fund lost some \$5 billion in less than three weeks, and by late September its counterparties took over its distressed portfolio of gas futures and forced its liquidation.



By 2005 the fund was very different from what it had been a couple of years earlier — **a clear example of strategy drift**. Its prior returns had little predictive value, as its strategy was largely new. The degree of discretion given to the gas trader hired in 2004 might by itself have been a yellow flag. In 2005 the fund's high profile seed investor announced his full redemption because the portfolio had strayed so far from its initial strategy.

**When volatility reached as high as 12% in a month**—even though the volatility was generally in the right direction—that was enough for investors to understand that the basic risk posture of the fund had changed dramatically.

Despite the fund's touted approach to risk management, investors might have seen yellow flags in the fund's **lack of formal stop-losses or concentration limits**. How much authority did the risk managers have?

One well-known fund of funds redeemed its money in late 2004, saying **the firm had grown too large**. Subsequently, other investors in their meetings with management could recognize a change in the fund's risk tolerance.

As the fund's allocation to energy rose from 15% to 40%, liquidity obviously dropped. A red flag was the **illiquidity of the leveraged size of the fund's positions** in gas futures if ever the market turned against the fund.

This case underlines the importance of an investor maintaining a vigorous manager monitoring discipline with its hedge funds, including frequent meetings with the managers, analyzing changes in strategy, people, and risk tolerance, and understanding the reasons why. Investors would have found that **the fund was not very transparent, even in face-to-face meetings**.

A review of the fund's service providers would have revealed the **use of an affiliated broker-dealer**, another yellow flag.

## Warning Signs

## Background

In 2004 a star manager for a large endowment fund left the staff after a dozen years and took many colleagues with him to start a new hedge fund, Fund K. The endowment fund was an original seeder of the fund, with a lockup preventing it from making withdrawals until the end of 2008. The fund compounded about 10% per year over its first three years and earned 5% in the first six months of 2007. Assets reached about \$3 billion.

The fund's chief financial officer had been a colleague at the endowment fund, but in 2006 the firm changed CFOs.

The founder had focused on foreign stocks and commodities while managing the endowment fund, but he traded a variety of instruments and strategies in Fund K, including convertibles, commodities, bonds, and stocks. Also, the fund often added value through complex bets on debt instruments. Significantly, the fund amplified its trades with gross leverage of up to 5x, financed through loans using the fund's assets as collateral. These loans allowed the fund to maximize leverage without having to post any margin until certain triggers were reached.

## What Went Wrong

In June 2007 the fund was down 5%. The fund maintained its credit spread positions in the loan and credit default swaps markets, but in July those spreads moved sharply against the fund. Investors shunned riskier debt such as subprime mortgages and the loans and bonds used to fund leveraged buyouts. As the fund's prices declined, its leverage more than doubled. The counterparty began to mark down the value of the fund's collateral severely, causing the value of its assets to drop by more than 50% since the beginning of the month. The fund couldn't make sales fast enough to meet margin calls, and that forced the liquidation of the assets.

By the end of July, to avoid having its counterparties sell their collateral at firesale prices, the fund opted for the immediate and comprehensive solution of selling substantially the fund's entire portfolio to a large hedge fund at a significant discount. The buyer subsequently made huge profits as the market recovered.

The fund was established by a highly experienced manager who was financially backed by the endowment fund where he had built his reputation. And in its first 3½ years, the fund's good returns had not been particularly volatile. How could investors have known better?

There was a ***change over time in the fund's strategy***. Originally, the fund said it was market neutral, but a few years later it characterized itself as "market independent," which seemed to imply some directionality.

A fund's modest volatility is no assurance of its low risk. If investors tracked the fund's leverage, they would have seen it slowly but steadily increasing. ***The fund's high leverage using fund assets as collateral was a yellow flag***. An investor could have calculated that a sudden market collapse could have forced the fund into liquidation, even if the underlying investments happened to be sound on a long-term basis. It was a smaller replay of the Long-Term Capital debacle of 1998.

The replacement of the fund's chief financial officer in 2006 was followed in February 2007 by the resignation of the chief operating officer, who had just joined the fund the year before. His responsibilities were picked up

jointly by the fund's general counsel and its director of portfolio accounting. Then in March 2007 the fund announced that as of May 1 it would move to a new administrator, one who could more readily handle the fund's more complex trades. These ***changes in key operating officers and the fund's administrator*** were opportunities for investors to ask hard questions of the manager.

The fund offered investors annual liquidity on June 30 with 65 days notice, so in the spring of 2007 an LP would have had to act in a timely manner in order to redeem before the fund collapsed.

## Warning Signs

## Background

After many years working for two large investment firms, most recently as managing director for foreign fixed income, the manager left in mid-2001 to found his own firm. He brought with him a chief operating officer. By 2007 the firm was managing some \$15 billion.

At the beginning of 2002 the firm established Fund L to invest in a broad range of fixed income securities, currencies, and, to a lesser extent, equities and commodities. Management's strategy was to invest on a directional and hedged basis to reduce correlation with the stock market, and it would actively manage diversification and volatility. The fund's target return was LIBOR plus 15% per year.

## What Went Wrong

Performance in 2007 was nearly flat through September. The fund made a big bet that the steepness of the yield curve within developed markets would return to normal. Underlying many positions was a macro bet that the Japanese economy was heading into a growth period and that the U.S. economy would grow despite sub-prime concerns.

The portfolio became far less diversified. Gross portfolio leverage rose from 6x in mid-2007 to 10x in October, and performance in October plunged more than 10%. The manager, however, didn't cut many positions, and the changes he did make backfired. Market dislocations continued to intensify, and the fund began losing on both sides of its portfolio. By November 15 some 20% of LP interests opted to give their 45-day notice to redeem at the end of the quarter. For the full quarter, the fund was down 25%. Instead of liquidating positions, the manager contacted investors and asked them to have faith in him and rescind their redemption requests. Few did.

By the fall of 2004, with \$500 million under management, the fund closed to new capital so it could continue to harvest low-liquidity themes in smaller, less followed markets. In its first four years the fund compounded about 25% per year. Its volatility was in the range of 15%, and its correlation with the stock market was about .50, all quite pleasing results for its investors. But the fund's closing to new capital didn't last. Additional contributions ran the fund's assets from the \$500 million in 2004 up to \$3½ billion (of the firm's \$15 billion) by mid-2007.

The fund's dealer agreements specified that when the fund's assets declined by 30% in a quarter, dealers could declare the fund in default and start to firesale its positions to raise cash. That would have been catastrophic, so the manager suspended redemptions.

Losses continued, as the fund was down nearly 10% in the first quarter of 2008. The fund began winding down, with a target to complete the wind-down by March 31, 2009. The manager continued to charge investors its 2% management fee until that date, but thereafter it reduced the fee on remaining assets. The fund continued the winding down process for several years thereafter.

As prospective investors considered the fund, they might have noted that ***the manager did not have a full-time risk officer who carried clout*** in the organization, one who reported to the CEO rather than the CIO. Investors might have regarded that as a yellow flag, especially when they discovered that the fund did not have a firm stop-loss procedure or a specific plan to react to draw-downs. ***The lack of clear measures of leverage or liquidity in the fund's monthly reports*** might have been a yellow flag for risk management.

The fund closed to new investors in 2004 in order to invest in smaller, less-followed markets. But LPs might have asked questions when the fund subsequently reopened and grew its assets many times. That increase had to involve ***a material change in the fund's strategy***, as the fund wouldn't be able to hold as broad a range of assets as it did when it was smaller.

The fund's great returns over its first four years suggested that those returns may have resulted mainly from directional bets, leverage, or a combination of both. Such trades can at times go the other way, especially when those bets are concentrated. A closer review of the macro effect of the fund's principal positions in 2007 might have revealed the ***increasing concentration*** of its bets and the resulting reduction in its diversification.

Early in 2007 some investors, during meetings with the manager, detected ***hubris***, along the lines of "I'm right, and the world is wrong, even though my positions keep losing money." This hubris led some of them to redeem.

***A further yellow flag was the mismatch of the portfolio's liquidity with the investors' liquidity.*** The ability of investors to redeem quarterly on 45 days notice was much too short notice for a portfolio that included a lot of over-the-counter assets with Level 2 valuations.

In 2007, if an investor performed extensive manager monitoring, the ***sum of the above concerns*** might have led him to submit his redemption request prior to August 15. Any later would have been too late.

Footnote: When investors, during their initial due diligence, reviewed the fund's terms and conditions, they might have noted the lack of a provision for a reduced management fee in the event of a wind-down of the fund. Before making their commitment, they might have negotiated a lower fee.

## Warning Signs

## Fund M When Liquidity Trumped a Hedge(!)

### Background

In 2005 a multi-strategy firm that was run by two former partners of a leading investment banking firm established a separate hedge fund, Fund M. This fund was to invest in asset-backed securities—specifically, to trade mortgage-backed securities with a relative value approach. By taking short bets on subprime mortgage securities, the fund generated strong performance that nearly doubled in 2007, and the fund's assets grew to nearly \$2 billion.

The managers believed in 2007 that investors in the mortgage market were beginning to differentiate between instruments of different credit quality, and that some classes of higher quality mortgages were underpriced. Therefore the manager shifted the portfolio to a net long position. He made long trades in the senior tranches of certain mortgage pools while shorting the more junior, mezzanine tranches.

### What Went Wrong

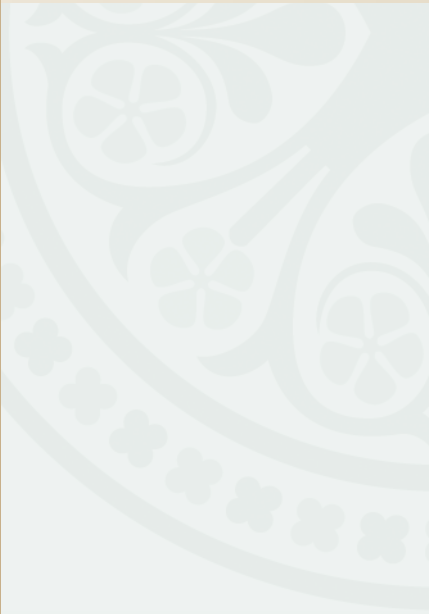
As mortgage defaults continued at a higher rate than expected, holders of the senior tranches of mortgage pools increasingly took advantage of their relatively liquid market to exit the sector, depressing prices of senior mortgage securities. The mezzanine tranches, however, were already trading at deep discounts, and as they were much less liquid, trading was relatively less active in these instruments. Hence, in late 2007 and early 2008 Fund M lost twice. It lost on its stakes in the senior mortgage securities, which sold off dramatically, and it also lost because the spread between senior and junior mortgage tranches failed to widen. Leverage magnified those losses.

Dealers exacerbated the situation by marking down the value of assets and raising margin requirements. The fund was forced to sell assets rapidly to meet dealer margin requirements. In February 2008 the fund was forced to liquidate, as dealers called in loans that exceeded the value of the collateral.

### Warning Signs

In 2007 the fund bet on a widening spread between senior and junior mortgage tranches, and employed significant leverage in an effort to magnify gains. Investors who studied the portfolio's construction would have recognized that between 2006 and mid-2007, the fund shifted strategy from being principally short subprime mortgage securities to a fund that was leveraged net long to different tranches of mortgage securities. But there was a beta mismatch in its long and short mortgage positions.

***Leveraging less liquid/illiquid assets was a toxic combination*** that couldn't survive a deteriorating market that was losing liquidity. Those who live by leverage can die by leverage.



**Background**

At the end of 2007 Fund N was sailing along with good success, even though it had not met its targeted mid-teens return. The \$3 billion hedge fund had earned more than 8% per year since its June 2000 inception. Its annual volatility was only 5%, and its correlation with the world stock market index was essentially zero, providing solid diversification value to most investors' portfolios.

The fund was established by several senior traders in fixed income and arbitrage who had worked together for many years at a large investment firm. The fund's CEO had been head of global fixed income arbitrage for the investment firm. A large institution seeded the fund and retained one observer on the fund's risk management committee.

The fund's investment styles were mainly macro and relative value—all executed in the G10 government bond markets and related interest rate swap and option markets. The primary focus was on mean-reverting relative value strategies. Yield curve strategies accounted for up to 50% of the fund's risk.

The fund's leverage ranged from 10x to 20x, but its strategy limited the maximum expected drawdown of each trade and the portfolio as a whole so as to sustain positions even in the worst market conditions. The fund expected its maximum potential portfolio drawdown to be less than 20%, net of all costs. It also held a minimum level of unpledged capital equal to 50% of NAV.

**What Went Wrong**

Published monthly measures of risk increased materially between 2006 and 2008, as changes in the fund's overall risk measure went from minus 7% in spring of 2006 to more than double that two years later. The greatest increases were in yield curve and volatility strategies. Between those two years, assets under management dropped from over \$3 billion to less than \$2 billion.

Suddenly on a single day in March 2008 the fund lost a quarter of its value, and it was down nearly 40% for the months of February and March. How could it happen?

The fund was burned by a so-called "box trade" in Asian government bonds—betting on the simultaneous increase in 20-year yields and decrease in 7-year yields. As spreads began moving the wrong way, the dealers clearly smelled blood and moved immediately to force a liquidation of the portfolio. Dealers had the ability both to mark down the value of the assets and to force additional margin at will—and in the trauma of the markets at that time, the dealers did the fund in. The fund's CEO blamed the debacle on the turmoil surrounding Bear Stearns and other events at the time.

Fund N had little choice but to shut down and return money to its investors.



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***A highly leveraged fund has the potential to become a land mine.*** With its continuing high leverage, the fund's game plan had worked well for more than seven years. The fund mistakenly made a highly leveraged and outsized relative-value bet that the spread between two bonds would revert to normal. ***Did the fund breach its risk guidelines?***

***The fund had poor transparency.*** But investors could have dug deeper into the fund's leverage and the quality of the fund's financing arrangements to determine if they were appropriate for the strategy. When the fund said it limited the maximum drawdown of each trade and the portfolio as a whole so as to sustain positions even in the worst market conditions, LPs might have asked how the fund could do this.

One limited partner redeemed in time. Its reason: the LP's staff member who had gotten the investor into the fund left the firm, and his successor said, "This may be a good fund, but I don't know anything about leveraged fixed income, so I'm going to redeem." ***It is crucial for an investor to fully understand its hedge fund's strategies and associated risks,*** and it can be wise for an investor to redeem in the event that it loses relevant expertise.

## Warning Signs

**Background**

**Fund O Double or Nothing**

Fund O was a hedge fund established in 1997 that compounded nearly 40% per year through 2007, with returns in some years exceeding 100%. It was a concentrated long/short equity fund with a value approach, while it had a strong preference for cyclical stocks as well as for smaller stocks. The fund said it would use leverage of up to 2x, and as the years passed its leverage moved toward the higher end of that level. The manager, whose assets totaled over \$7 billion, was comfortable making contrarian, directional investments with a long-term view. He identified situations where stocks were trading at a substantial discount from their estimated intrinsic value.

Transparency of the fund's leverage was often vague and became less clear over the years.

Redemptions were permitted once or twice a year with 90 days notice, and in some cases 25% of an account could be redeemed on 45 days notice.

**What Went Wrong**

In 2007 and 2008, the fund leveraged its long exposure, as the manager expected U.S. manufacturing and other cyclical sectors to improve. He had heavy thematic exposure to several industries, including a number of less liquid small cap stocks. The manager had substantial personal capital invested in the fund, and he was comfortable taking risk with his capital.

The manager subsequently launched a successor fund and allowed investors in the prior fund to invest at a reduced management fee and no performance fee until they had recouped their losses. Three years later, however, the successor fund collapsed, losing about 40% in the first nine months of 2011.

In 2008 the portfolio included several positions that equaled as much as 15 to 40% of a company's outstanding shares, a size that made them almost impossible to sell. After the demise of Lehman Brothers in September 2008, while U.S. equities continued to spiral down, the fund chose to significantly increase its bets, and by the end of October fund values had plummeted some 80% from the beginning of the year. The fund was unable to meet large redemption requests, and the manager decided to close the fund.

The outsized returns that the fund achieved over the years, including 100% in a single year, could only have been achieved with both **excessive concentration and leverage. The leverage compounded the already-high volatility** of the cyclical, smaller, less liquid companies in the portfolio, many of which had considerable business risk. The combination was potentially lethal at such times as the market turned sharply against the portfolio. Virtually any fund that can earn 100% in a year could easily go into a steep slide. Investors should have recognized what could happen in a disastrous market.

In fact, some investors did just that, making annual redemptions to rebalance their holdings to an appropriate percentage of their portfolios.

When investors asked the manager about the amount of the fund's leverage, he told them to have trust in what he was doing or to get out. In some cases, he actually told them to get out. **Was that a sign of hubris?**

The fact that the manager was personally invested heavily in his own fund should not give comfort to an investor if **the manager's risk tolerance is greater than that of the investor.**

## Warning Signs

## Background

### Fund P The Danger of Leverage in a Declining Liquidity Market

In November 1999 three experienced portfolio managers founded a new hedge fund management firm and began Fund P, a multi-strategy fund. The senior partners had held portfolio management positions in a highly successful hedge fund for more than 10 years. By 2007 Fund P's assets were worth about \$3 billion, with nearly \$2 billion more in similarly managed private accounts. The firm employed over 1,000 people.

During the 8+ years between its November 1999 inception and December 2007, the fund earned more than 12% per year. The fund said it focused on capital preservation and intended to have low volatility, and it succeeded in this: 7% standard deviation of rolling 12-month returns. Its largest drawdown was less than 10% in 2002. The fund was intended to minimize exposure to the stock market and was moderately successful: less than .60 correlation of rolling 12-month returns with the MSCI All Country World Index.

The fund's client base consisted mostly of long-term investors, except perhaps for some 30% from funds of funds. The fund's strategies were based on fundamental research. The fund varied its strategies over time. It added credit after the credit markets crashed in 2002 while cutting event-driven strategies, then rebuilt event-driven in 2007. Meanwhile, the fund increased its leverage of net assets from 60% to 155%. Gross leverage eventually exceeded 300%.

In 2007 the portfolio consisted of more than 1,000 positions and nearly 300 situations. Nearly 80% of the fund's exposure was in the U.S. To the extent that the fund invested in leveraged products such as options or credit default swaps, the fund reported to investors the full notional value of the exposure.

Risk was managed by the investment committee, as there was no independent risk officer. The fund said in 2007 that about 85% of the portfolio could be priced via Bloomberg feeds, 10% via broker quotes, and the remaining 5% were private situations valued under the fund's own valuation policy. The fund did not use side pockets.

The three founding senior partners continued to be the core of the investment committee in 2007, and overall, personnel turnover did not seem alarming, given the size of the firm.

The fund offered three liquidity classes, with 1-, 3-, and 5-year lockups. Redemptions required 90 days notice, except that annual net gains could be redeemed on 45 days notice. There was a 10% quarterly liquidity gate, but it had never been used. In September 2007 the fund said that 7% of the fund's capital was eligible to be redeemed at year end based on anniversary dates, and another 7% could be redeemed at the end of 2008.

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The manager of event-driven situations said in September 2007 that then was the best opportunity for risk arbitrage since he began his career in 1997, but four LBO deals fell apart early in 2008, and the manager was terminated by that June. The manager running the credit team was also terminated in 2008. In October 2008 the fund said that by year end it expected redemption requests to equal about 15% of the fund, but it said that the fund was fully pre-funded for this and would not have to do any forced selling.

For the full year 2008, the fund was down more than 40%, and at the end of the year it became sufficiently illiquid that the sponsors closed the fund and placed the assets into a Special Purpose Vehicle (SPV), which made payouts over the next 2½ years as it sold the assets. By mid 2011 the SPV completed its work, having paid share owners the equivalent of nearly three-quarters of the fund's 2007 year-end value.

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Because of the limited and diverse liquidity dates, it was impossible for most investors to be adroit in making redemptions.

***The steady increase in leverage over the years was a yellow flag*** that investors should have evaluated. Another yellow flag may have been the ***lack of a full-time risk officer*** who carried the authority to liquidate trades.

Given a portfolio with 1,000 different positions and nearly 300 situations, ***investors might have considered whether this was too complex*** for the staffing and management of the fund.

***If all illiquid assets had been placed in side pockets as they were purchased***, and if additional side pockets had been created for once-liquid assets as they moved to Level 3 valuations, would the fund still have had to close? Possibly not. The fund said it did not use side pockets because its LPs didn't want them. If so, investors reaped the fruits of their own short-sightedness. Redeemers were able to collect more than the fund's assets were really worth.

## What Went Wrong

## Warning Signs

## Background

In May 1994 a new hedge fund management team began a convertible arbitrage fund—Fund Q—which tended to focus on misunderstood or distressed companies. For the next 10 calendar years the fund compounded about 15% with a 7% annualized standard deviation of rolling 12-month returns, a solid track record in its strategy.

Starting in 2002 the fund began to evolve into a multi-strategy fund when it hired a portfolio manager for high yield and distressed. In 2004 it hired a portfolio manager/head of research and a senior analyst in long/short equity and international, and in 2005 analysts in special situations and the emerging markets. Through the years, the fund's key people remained intact from inception, and turnover remained low.

The years 2004 and 2005 were difficult for convertible arbitrage, and the fund expanded increasingly into other strategies. During those years investors became disenchanted with convertibles, and between the year ends 2004 and 2006 the fund's assets under management dropped from nearly \$2 billion down toward \$1 billion. The fund regained momentum in 2006 and 2007, when it was up nearly 15% each year. By year-end 2007 the portfolio had expanded to some 300 companies, some 45% of which were non-U.S.,

including nearly 30% in the emerging markets. Among investments in the emerging markets were a semi-liquid investment in India and a real estate development in Jordan. About one-third of the portfolio was in event-driven, one-third in credit, and only about one-quarter in convertible arbitrage.

As measures of the fund's overall risk, leverage reached about 3x net and 5.5x gross,<sup>2</sup> but by the end of 2007 leverage was down to 2x net and less than 3x gross.

Although convertible arb portfolios are usually fairly liquid, the fund's added strategies involved some illiquidity. Illiquid securities were priced by a set of well-defined rules based on multiple independent pricing sources or mathematical models, or an independent appraiser. Over-the-counter instruments were priced by theoretical models on a daily basis, and by dealers/counterparties as often as possible but at least monthly.

The fund was sold as a modest volatility fund, and over the years it had achieved modest volatility. In 2007 the manager said that a monthly loss of over 3% would be considered a large decline, whereas a loss of over 10% would be considered catastrophic.

## What Went Wrong

In January 2008, however, the fund was down more than 15% in the first quarter—well above that 10%. Margin calls greatly exacerbated the situation. Investors could redeem quarterly on 60 days notice, and many did. More than \$200 million was redeemed at the end of March, followed by another \$100 million in each of the next three quarters. The fund's quarterly gate of 12.5% was breached, but it didn't apply to certain initial investors. Out went the liquid assets, and many of the less liquid assets were sold at distressed prices. For the full year 2008 the fund was down 48%.

Early in April 2009 the fund was turned into an SPV—a special purpose vehicle for liquidating. Shortly before the fund was closed, the management firm started up a new fund devoted explicitly to its specialty, convertible arb.

By mid-2012 over 85% of the fund's 2008 year-end value had been returned to its investors, with remaining assets in the SPV equal to nearly another 20% of that initial value.

<sup>2</sup> The market value of longs minus shorts was about three times the net asset value, and the market value of longs plus shorts was about five times net asset value.

A fund **moving from a specialty area to a multi-strategy fund** can be viewed as a yellow flag. Investors cannot assume that a management group is always able to transfer its skills from one strategy to another. Investors must restart their due diligence to determine if the management has the staffing and skills to execute the new strategies effectively.

By year-end 2007—only a couple of years after the fund hired a senior analyst for international and an analyst for emerging markets, nearly half of the portfolio was invested in non-U.S. situations, including nearly 30% in the emerging markets. **This heavy allocation to non-U.S. and the emerging markets so soon after adding those staff members was another yellow flag.**

When a fund changes its character, investors should monitor the situation continuously to judge whether its new levels of liquidity warrant a change in the fund's terms and structure. As soon as **illiquid investments were added to the portfolio**, investors should have pressed the manager to place them in side pockets and adjust the leverage.

If an investor had actively monitored the fund's **liquidity and leverage**, and the extent that the portfolio consisted of distressed situations, he might have seen that portfolio liquidity might be adequate in a normal market, but that any moderately abnormal market could have caused a serious liquidity crisis.

**The fund's redemption provisions for investors—especially the level of the gates—were not consistent with the liquidity and leverage of the portfolio.** It was predictable that heavy redemptions would take out most of the portfolio's more liquid holdings, leaving the fund in a precarious position.

When the fund plunged more than 15% in the first quarter of 2008, after the manager six months earlier had said that a 10% drop would be catastrophic, investors would have done well to take the manager at his word about volatility.

## Warning Signs

## Background

Around 2000 a team of successful fixed income arbitrage managers exited a large hedge fund and set up its own fund—Fund R—with the backing of a single institutional investor. The fund did very well during 2002–07 and grew to over \$5 billion, investing in a wide range of fixed income and credit strategies.

Like many such funds, it benefited from positive carry,<sup>3</sup> falling interest rates, and attractive credit spreads that were available after the 2002 market correction. By 2007, the firm was trading a wide range of relative-value positions using a number of cash and, increasingly, derivative instruments. Leverage rose to 10x through the use of term repo credit facilities to cover short sales, and subsequently through derivatives such as total return swaps and credit default swaps.

The fund held its range of investment vehicles through multiple counterparties, both in the U.S. and abroad, but the fund had no central clearing agent. The terms of each counterparty provided for slightly different haircuts, margin features, and default terms, even if in some cases the investments were based on the same underlying securities. The fund normally held a cash balance of 40 to 50% of NAV as a buffer to support negative cash flow associated with margin calls.

## What Went Wrong

In the first half of 2008 term repos became harder to arrange. And banks—which sought to contract their balance sheets—declined to roll over the fund’s total return swaps. After Lehman Brothers failed, the fund’s lack of netting facilities or central clearing prevented gains from offsetting the plunging prices of highly rated

mortgage-backed securities and other holdings. In mid-2008 the firm held cash equal to 40% of its AUM, but continuous margin calls that autumn forced it to sell assets at firesale prices, and by early 2009 the fund ran out of cash, defaulted to its largest counterparty, and had to close.

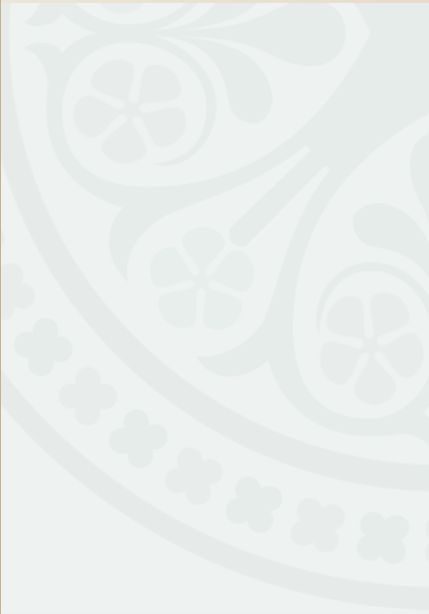
## Warning Signs

Investors were mesmerized by the fund’s strong, consistent performance over the last 10 years. They apparently never asked the question, “Given your high leverage, what price changes could put the fund out of business?” Had they asked, the fund might have identified the situation that eventually occurred. ***A fund with such leverage was not prepared for a black swan event.***

A fund can find it advantageous to have multiple counterparties, depending on how it structures its investments. But if investors had asked about the fund’s netting facilities, they would have learned ***that the fund did not fully appreciate the risk in its lack of netting facilities***—the risk that potential demands on cash could be greater than potential net losses.

<sup>3</sup> Positive carry is where the cost of financing an investment is cheaper than the yield on the investment.





## Background

In October 1997 a new fund of hedge funds was launched with the objective of generating net annual returns of LIBOR plus 4% with a standard deviation of less than 4%. The management firm was established by two portfolio managers who since the 1980s had been managing hedge fund strategies under the proprietary trading platform of a well-known investor of private capital. They were assisted by a consulting firm for due diligence and were advised on portfolio construction and risk management by other firms. They built the fund from a database of more than 1,000 managers.

In 2003 the fund's portfolio was divided among 12 different strategies, with mid-teen exposure each to arbitrage, fixed income, and distressed debt—including 10% in distressed debt in Asia. Only 2% was in equity long/short. The fund re-weighted its various strategies opportunistically. For example, it reduced merger arbitrage from 25% of its portfolio in 2000 to 2% in 2003.

In September 2002 the management firm started up a leveraged version for taxable investors, and at the beginning of 2004 an offshore leveraged version, Fund S. This fund invested initially in nearly 30 hedge funds,

most of them the same as in the unlevered fund. Fund S was leveraged up to three times and was intended to provide net returns of 15 to 20% per year with volatility of about 12%, still materially less volatile than the stock market. Fund S told its investors that in a bad market they should be prepared to lose as much as 20%. Within a year of inception, Fund S held about the same net assets as the unlevered fund. Limited partners in Fund S could redeem at the end of each calendar year with 45 days notice.

The unlevered fund weathered the storm of the dot-com bubble of 2000–2002 very well, as its returns for those three difficult years averaged nearly 8% per year. In 2003, the unlevered fund earned 13% and the taxable leveraged version earned 32%. Over the next four years the unlevered fund compounded about 9% per year with 9% rolling 12-month volatility while Fund S earned 10% with 18% volatility—very little extra return for the higher volatility.

## What Went Wrong

Both funds were hard hit in 2008. The unlevered fund was down 21% and Fund S declined 45%, and there was a mass exodus by investors in Fund S and in its underlying funds. Many of the underlying funds were unable to meet their redemption requests and had to raise gates. Gross assets in Fund S, which had approached \$240 million at the end of 2003 dropped below \$30 million by March 2009. Leverage by then was down to 1.2x, and the fund's directors told investors that they felt it was in the best interest of the fund and its shareholders to wind up the fund's operations.

By early 2012 Fund S payouts had about equaled the fund's year-end 2008 value, and nearly 20% remained in investments that the fund had still not managed to redeem. As of December 2011, Fund S stopped producing monthly NAVs due to "the illiquid nature" of its remaining holdings. Meanwhile, the unlevered fund continued without interruption.

The unlevered fund was established as a low volatility fund with modest target returns. Fund S offered investors who could accept higher volatility an opportunity to earn more attractive returns at an expected volatility that was still lower than equities. Some funds of funds have leverage facilities primarily for liquidity management purposes, but others use a bit of leverage to boost returns. **Leverage beyond 30 to 50%**, however, can be a yellow flag.

Investors in Fund S should have considered that returns and volatility are not linearly related to leverage. In times of illiquidity (not just in 2008) the value of levered assets can get hit harder when prime brokers adjust values downward for less liquid or more volatile market conditions. And valuations can be hit further when the manager is forced to sell assets in order to meet margin requirements. This gets more complex, of course, when the subject is a fund of funds instead of a fund of individual securities. **A strategy that works without leverage may not work with leverage.**

Fund S investors should have seen that the slim increase in returns over the unlevered fund in 2004–2007 was simply not worth double the volatility. The unlevered fund survived 2008. But once the year began, it was too late for LPs in Fund S to redeem. From the start, LPs probably should have viewed Fund S, especially with its high leverage, as an accident waiting to happen.

## Warning Signs

## Fund T Leveraging the Illiquid

### Background

In May 2005, Fund T was established by an entrepreneur whose distressed investments unit of a large successful hedge fund had compounded nearly 40% in 2003–04. Within months, the fund raised \$1 billion in assets, and in 2008 the fund peaked at about \$5 billion. The fund compounded 10% per year through 2007. It focused on a broad range of credit investments, and in 2006–07 direct private loans became a larger part of the portfolio.

During 2008 the fund was down about 20%. Given the devastated market for credit risk at the time, this performance was better than many of its peers.

### What Went Wrong

The fund received heavy redemption requests toward the end of 2008. The manager decided not to sell assets. Instead, he suspended redemptions and set an elongated redemption schedule. Performance continued poor in 2009, key professionals departed, and the fund created a liquidating share class.

The fund's assets were wound down slowly, and by 2011 half the assets had still not been sold. The management firm had other problems as well. It faced lawsuits related to predatory lending, together with regulatory inquiries and allegations that the manager overvalued its portfolio and charged fees on artificially inflated values.

### Warning Signs

The time for an investor to avoid this fund was either before it subscribed or as soon as it saw an increasing percentage of the portfolio going into private loans. The private loans created a disconnect between the liquidity of the fund and the liquidity that the fund offered investors. Moreover, ***leverage with illiquid investments can spell trouble.***

Investors should have seen a red flag when ***the fund failed to place private loans in side pockets***, and especially when these private investments became such a large portion of the portfolio. ***Adequate transparency could have alerted investors to the liquidity risk.***

Investors might also have questioned how in three years the fund could have done an effective job of putting to work several billion dollars in distressed investments—the managers' prior specialty. ***Did the fund grow its assets too fast?***

Manager monitoring on the operations of the fund and on its risk management might have deterred many investors from having placed money in the fund. ***Investors should have insisted on a highly qualified independent firm to value Level 2 and Level 3 investments if this wasn't already provided for.***



**Background**

**Fund U The False Comfort of a Low Volatility Fund**

A manager with 10 years of investment experience started his own fund, Fund U, in 2004 with \$500 million in a direct loan strategy. Assets grew within a few years to more than \$5.5 billion, at which time the firm had 15 offices around the world and some 1,000 employees.

The staff included specialists who made thousands of exotic loans around the world, accessed through a network of global relationships. The staff also serviced these loans. Many investments were mezzanine loans that were quite illiquid, but the fund did not use side pockets for them. The manager's strategy was to learn everything about a prospective borrower, figure the odds of repayment, and set the interest rate and other terms to whatever the market would bear. The fund produced nearly 50 consecutive months of positive returns.

The fund was one of the least liquid for investors, who could redeem only every three years on their anniversary date. Since many of the loans carried high interest rates, the strong, steady cash flow was deemed sufficient to fund redemptions when needed.

Through 2007 the fund compounded about 20% per year before fees, with volatility a miniscule 3% per year. The fund required clients to invest in its funds for at least three years before they could withdraw money, and it required 120 days notice for redemptions.

For its CFO, the fund hired a member of the manager's prior hedge fund employer, who had over 10 years of experience.

**What Went Wrong**

By June 2005 the manager became aware of accounting problems and hired a lawyer to look into them. The firm had borrowed money from the hedge fund and subsequently repaid it without interest. Also the firm withdrew its management fee before it was due in order to meet a cash shortage. By February 2006 the SEC required all hedge funds to register, and the manager decided to tell the SEC everything in hopes of getting swifter and more favorable treatment.

More than 3½ years later, in the second half of 2009, the SEC reported that on 25 occasions between March 2004 and July 2006 the investment adviser had improperly transferred client cash between client funds and also from client funds to the investment adviser. As a result of the SEC investigation, the auditor didn't complete the fund's 2006 audit until December 2007.

By year-end 2007, with \$2 billion in redemption requests, largely because of the tardy K-1s, the manager closed the fund and in February 2007 told investors about the infractions, which included miscalculating NAVs and the value of certain illiquid investments. The manager told investors that it would take two to four years or longer to sell the assets in an orderly fashion.

In April 2009 the fund turned the remaining \$2.5 billion in illiquid assets over to a large hedge fund manager to wind down.

When returns look too good to be true, they probably are. With such consistent month-to-month returns, investors might have investigated ***the way in which the large number of illiquid loans were being valued.*** Investors might have questioned the independence of valuations and why such a large portion of the portfolio hadn't been placed in side pockets. If the fund's reports hadn't shown the high proportion of illiquid assets, direct questioning of the manager would have uncovered it.

Investors might have looked into the sources on whom the staff relied for loans, who the people were, and how well known they were. ***Investors could have learned, for example, that in some cases the staff had never met the person who sourced a loan, and that that person was not subsequently responsible for servicing the loan.*** By reviewing the paperwork on some specific deals, they might have questioned the fund's ability to enforce the terms of the deal.

Some investors who conducted thorough due diligence on the fund's operations found many practices that needed improving, including questionable ability to track all cash flows. ***As the fund grew and became more global and more complex, the operating staff didn't grow to keep up.***

Continuing review by investors of service providers could have revealed that in June 2005 ***the account executive of the fund's accounting firm had resigned,*** ostensibly to have a baby but also because she was uncomfortable with the interfund transfer practice. Her successor quit a year later for the same reason.

Investors might have also reviewed ***the background of a trader*** who joined the manager in June 2005. They might have learned that he had been fired by a global bank for inflating the size of his commodities book by \$20 million to bulk up his bonus—an action to which he subsequently pleaded guilty.

## Warning Signs

## Background

In 2002 two senior executives from the investment management arm of a leading Asian investment firm launched an offshore-based hedge fund, Fund V. Since the manager did not have a license to provide discretionary investment advice, it partnered with a discretionary adviser that had been a subsidiary of a large U.S. insurance company. Ultimately, the two merged in 2004.

The fund compounded about 20% per year over its first four years using an absolute-return strategy, and it became a popular holding by Asian pension funds. Then when the stock market plummeted in 2008, the fund still managed a positive 7% return. It led all managers of pension funds in an annual survey compiled by an Asian rating firm. The fund continued with high single-digit returns through 2011, all with low volatility that averaged less than 7% per year. Its assets reached \$2.6 billion.

## What Went Wrong

In February 2012 Asian financial authorities suspended operations of the management firm after the fund was unable to account for the bulk of its \$2.6 billion assets. A month later the founder admitted covering up losses of \$1.3 billion and falsifying investment reports. He had inflated the size of assets and investment results to hide the fund's trading losses, hoping he could recoup them in the time ahead.



Red flags galore were flying. ***A little due diligence—especially on service providers—could have saved investors from the debacle.***

- There were no independent audit reports to verify asset balances.
  - Since the Atlantic offshore administrator was not a well-known company, an inquiry into its ownership and its other businesses might have revealed the fact that it was wholly owned by the fund manager.
  - The administrator reported net asset values through an Asian brokerage firm that was over 80% owned by the fund manager and also served as the fund's placement agent. These matters were not disclosed to investors, but with a bit of due diligence investors could have found out.
  - The fund had ***no prime broker***, and it would have been nearly impossible for the fund to execute all of its trading without a prime broker.
  - Initial due diligence could have revealed that a key member of the management team had a ***criminal conviction*** (but with a suspended sentence) in connection with a widely publicized payoff scandal in 1997.
- ***Transparency was poor as to how the fund had achieved its results.***
  - How could the fraud have happened if investors' due diligence had focused adequately on the ***risk management and operations management*** functions in the firm?

Finally, ***whenever a fund's returns seem too good to be true***, that should arouse extra skepticism on the part of investors.

## Warning Signs



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## LESSONS FROM HEDGE FUND ACCIDENTS

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In this white paper we have highlighted 22 cases of hedge fund failures. There have been numerous other instances of hedge fund failures, but these have been a small minority of the universe of thousands of hedge funds. Yet avoiding such failures can do much to strengthen our portfolio results.

The cases we highlighted failed as a result of multiple reasons, but *excess leverage and illiquidity*, often together, were the leading causes. This creates a challenge, because the use of leverage, and investments in less liquid assets, are key attributes of many alternative investment strategies. How do we distinguish between opportunistic investing and a fund that is overly risky ... or between risky strategies and red flags?

We have two opportunities to avoid accidents—first during our *initial* due diligence, and then during our *continued* manager monitoring after we have invested in a fund. Let's develop a checklist for each of these two opportunities.

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### INITIAL DUE DILIGENCE

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#### Risk Management

Does the manager set diversification and leverage limits that are appropriate for his strategy? How does he measure leverage and set leverage limits? What measurements does the manager use to determine the fund's minimum diversification requirements? Who enforces these risk limits? Does this person have the authority to liquidate a trade? Every fund should have documented risk parameters that the management team follows seriously and which is made available to LPs. Ideally, the portfolio manager should not also serve as the fund's chief risk manager.

How is the leverage achieved? Is balance sheet leverage allocated among multiple prime brokers in such a way that the fund's losses can still be netted against its gains? Does the fund limit its use of collateralized loans—where a broker, when prices plummet, can use its own judgment to mark down the value of collateral and demand increased collateral or else liquidate investments? What options does the fund have if a lender declines to renew a repo facility or a term loan? Has the fund increased its leverage over time or changed the way it has implemented its leverage?

Concerns about any of the above can be a yellow flag.

Every fund should have firm risk limits, and many investors believe that every fund should have a risk manager who has the authority to take action to cut risk without jeopardizing his job. Few hedge funds today have risk managers who are independent enough to enforce predetermined risk limits, but perhaps this is something limited partners should insist on. In the cases we reviewed in this paper, few had independent risk managers.

### Illiquidity

Many funds had to lower gates and ultimately close because they didn't have enough readily liquid assets that they could sell when investors sought to exit the fund—typically after a market correction drove asset values lower and leverage levels higher. Alternatively, the funds often met redemption requests by selling their most salable assets, leaving remaining LPs with a highly illiquid portfolio.

A number of the funds might not have had to close if they had established side pockets<sup>4</sup> and liquidating trusts<sup>5</sup> for all their Level 3 assets<sup>6</sup>—assets with Level 3 valuations, which are essentially illiquid. Side pockets and liquidating trusts would have enabled those funds to treat their LPs more equitably. Redeeming investors would have received cash from liquidated securities but retained their side-pocketed allocations of illiquid assets until they could eventually be liquidated. Some investors, however, had told the fund they didn't want it to establish side pockets. By taking that position, those LPs proved to be their own worst enemy.

Some funds gave investors a choice of whether or not they wanted to invest in new illiquid assets that would go into side pockets. But some assets that are liquid when the fund purchases them can move over time to Level 3 illiquid valuations. It can be argued that funds should establish a side pocket as soon as an existing investment moves to Level 3. The fund's remaining portfolio would thereby be entirely without Level 3 assets. With such use of side pockets, the fund would be less likely to self-destruct, although excess leverage could still damage a fund irreparably.

The matter is also one of equitableness. There is no observable way to value a Level 3 asset, yet without side pockets every time an LP buys or redeems such a fund, he is in effect buying or selling Level 3 assets at an unobservable price. No one would be able to buy or sell a Level 3 asset separately at that price.

The treatment of illiquid investments is a matter that we should clarify with a fund before we decide to invest. If the fund does not use side pockets, then we must—on an ongoing basis—pay close attention to the compatibility of the *portfolio's* liquidity with *our* liquidity (our redemption provisions), and remain aware of redemption requests submitted by other LPs. Liberal redemption provisions, instead of being a benefit to LPs, can sometimes work to our disadvantage.

<sup>4</sup> Some hedge funds place illiquid or difficult-to-price investments in a side pocket, which is essentially a separate private equity fund. Such investments include real estate investments in private companies, or PIPEs (private investments in public equity). A side pocket is limited to investors at the time the side pocket was first created. Each participant receives payouts whenever the side pocket generates income or sale proceeds.

<sup>5</sup> A liquidating trust is a side pocket set up specifically to sell illiquid assets. Under a separate trust, less liquid assets can be sold when most appropriate without affecting the LPs remaining in the fund. The structure helps avoid a situation where economics get shifted improperly between departing and remaining LPs due to poor liquidity and uncertain pricing.

<sup>6</sup> Accounting standards create a hierarchy of fair value pricing as follows:  
Level 1—Inputs that reflect unadjusted quoted prices in active markets for identical assets.  
Level 2—Inputs other than quoted prices that are observable either directly or indirectly.  
Level 3—Inputs that are unobservable.

## LESSONS FROM HEDGE FUND ACCIDENTS (CONTINUED)

*Key Question*—Considering the fund’s plans for leverage and liquidity, how well is the fund likely to withstand a black swan event<sup>7</sup>—a totally unpredictable debacle in the security markets? How will the fund hold up when the markets suffer their periodically fat left tails?

### Transparency

Most of the failed funds we viewed provided inadequate transparency.

What monthly reports will the fund provide us, and with what timeliness? Do those reports have enough information to allow us to evaluate the fund’s risk and its potential for returns, and thereby enable us to decide whether or not to remain in the fund? Does the transparency provide performance attribution so LPs can connect performance to strategy? Will the fund manager or investor relations director be willing to answer questions raised by those reports or other concerns of ours?

Hedge funds should be expected to provide investors a monthly report—or at least quarterly—that contains the following information:

- Brief performance commentary.
- Discussion of any changes in key staffing.
- Performance attribution by sector, by geography and, if applicable, by asset class.

- For long/short equity:
  - Gross and net exposures (including futures) overall, and by sector, geography, and asset class. Also, beta-weighted exposures, at least on the overall portfolio.
  - Delta-adjusted exposure of options.
- For non-equity strategies:
  - Gross and net exposures expressed in terms of a market value basis, a notional basis, and maximum loss.
  - Fixed income derivatives expressed on a 10-year equivalent basis or other appropriate metric.
- Annualized standard deviation of daily performance as well as VaR,<sup>8</sup> both for the latest month and since inception. This data allows investors to track meaningful changes in volatility over time.
- Assets of the fund, the strategy, and the firm.
- Illiquid (Level 3) assets as % of NAV.
- Percent of assets that are valued independently.
- Number of long and short positions. Position sizes for the top 10 long and short investments as % of NAV.
- Composition of investors.
- Relative to redemptions:
  - Percentage of shares redeemed in last quarter.
  - Percentage of shares eligible for redemption next quarter and next year end.
- Historic monthly returns.

<sup>7</sup> A rare high-impact event that is beyond the realm of normal expectations in history, science, finance, and technology (from Nassim Taleb’s book, *The Black Swan*).

<sup>8</sup> Value at Risk (VaR) is a widely used risk measure of the risk of loss on a specific portfolio of financial assets.

Fund managers understandably don't want to reveal information that could allow competitors to use that information to disadvantage the fund's current holdings or strategies. But some fund managers hide information that would provide competitors with no such advantage, and it is a sensitive investor who can discern when the manager is withholding information unnecessarily.

Virtually all of the cases we reviewed lacked adequate transparency about leverage and liquidity. Lack of adequate transparency is a red flag. If the fund is otherwise truly outstanding, we need to do some deep soul searching as to what compromise in transparency, if any, we deem acceptable.

### **Complexity**

Some investment strategies are just too complex for many investors to understand without full transparency and active monitoring. If we can't fully understand and evaluate the risks of a fund's strategy, we shouldn't have it in our portfolio. Also, if a strategy is too complex, it has a higher probability of not working as designed.

### **Operations**

Does the fund have an experienced operations manager or chief financial officer with high stature in the firm? We need to research a fund's operations as thoroughly as we research its investment strategy. Complicated strategies require sophisticated operational processes. Are the fund's operational professionals treated as second class citizens? What vibes do we sense among the various team members? Are proper controls in effect throughout the firm's operations? Is cash reconciled at the close of

each day? How do its prime brokers rate the fund's operations? These questions can lead to a yellow flag.

For investors who don't have the resources to pursue these questions, there are organizations that specialize in doing due diligence and operations monitoring for investors.

### **Background Checks**

Background checks on the fund's key people should be routine. It is crucial that we do business only with people who have demonstrated a long-term commitment to high integrity. Our intuitive reaction as we meet the managers is important, but it is not enough. We also need to understand the managers' personal and business relationships to gain confidence that there are no conflicts of interest. We should be sensitive to signs of emotional immaturity and character flaws.

### **Managers' Own Investment**

A key advantage of alternative investments is that fund managers typically invest their own money alongside ours, and we should be sure that a manager is investing a meaningful proportion of his wealth in his fund, especially if it's a diversified fund. But we also need to assess whether the manager's personal risk appetite is consistent with our own. We may not be happy if we find he is more willing to gamble than we. Contrary to conventional wisdom, a manager who has the majority of his wealth in the fund may be apt to be irrational when faced with steep losses. Many frauds and Hail Mary passes have come from managers not adequately diversified away from their own fund.

Of course, if a fund is highly specialized, we should not expect the manager to have as much of his own wealth invested in it.

## LESSONS FROM HEDGE FUND ACCIDENTS (CONTINUED)

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### Terms and Conditions

We should review legal documents as carefully as our lawyers do. Are the terms likely to make the manager's motivations and ours as congruent as possible? Are there key man clauses covering those senior individuals who are key to the success of the fund? Is there a provision to reduce management fees if ever the fund should begin to wind down? Are there side letters that grant special rights to other investors that aren't available to us?

Do any initial investors have preferential redemption privileges? If so, that could allow them to get out before we can when market conditions turn sour.

Most funds provide the general partner with a performance fee at the end of every year based on both realized and unrealized gains in excess of a high water mark. In virtually every case we reviewed in this white paper, the manager received a handsome performance fee shortly before the fund fell off a cliff. Investors were hurt twice.

An approach fairer to investors would be a performance fee that is payable in installments—such as half payable one year after it was accrued, provided the NAV is still above the high water mark, and the rest payable after the second year (with the same proviso). We know of no hedge funds with those provisions today. But shouldn't we investors insist on such provisions? Might such provisions reduce the likelihood of a manager taking on too much risk?<sup>9</sup>

<sup>9</sup> Just this June, 2012, the European Securities and Markets Authority mandated that, with respect to hedge fund and private-equity managers, bonuses for risk-taking employees should be withheld for a certain length of time to align managers' interests with the long-term performance of the fund.

### Service Providers

To avoid frauds, we should look carefully at the fund's administrator and its auditor. Are both independent and respected? If not, that's a red flag. Are the fund's valuations determined by the administrator or by a different qualified and independent firm? If responsibility for valuations is left to the fund itself, that's also a red flag. Investors should receive a flow of information about holdings and valuations that is independent from the manager.

Who are the fund's prime brokers? Are all prime brokers top credit quality? Do all prime brokers acknowledge the fund as a client? Have prime brokers been changed? Changes, depending on the reason, could be a yellow flag. Also, we should review the fund's audits for the past several years.

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## MANAGER MONITORING

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Entering an alternative investment is the beginning of an ongoing manager monitoring process. We have seen many cases where a hedge fund looked fine in due diligence but still got into trouble from which the astute investor could have escaped if he had been monitoring the investment closely. Manager monitoring includes our following the manager's monthly reports, comparing them with prior reports to see how the fund has evolved over time, calling the fund whenever we recognize an anomaly we don't understand, and visiting the fund manager periodically for a face-to-face review.

With each of our hedge funds, we should continuously keep an eye on the exit. One way to do this is to keep a calendar of the next exit notification date for each of our hedge funds—the last date we can request a redemption on that fund’s next redemption date. Maintaining and regularly reviewing this calendar is one way we can keep a continuous eye on exits.

What warning signs should we look for?

### **Strategy Drift**

If we notice that the fund is veering from its announced and historical investment strategy, that may reflect flexibility, but it may also be a yellow flag. Is the manager moving away from the area of his proven competence? Is he getting into an area that we didn’t sign up for? Is he plunging into a popular new strategy because the old one has dried up?

### **Increased Volatility**

Does a fund’s increased volatility reflect an increase in the volatility of the overall market? If not, this may be a dangerous form of strategy drift. Are the fund’s diversification and leverage limits that we understood when we entered the fund still being enforced? Does the head of risk management still carry the same authority? This is a key point on which we need continuing assurance, especially if the fund has significant leverage.

Sometimes low volatility can be a mirage. We need to understand whether there is much more risk than historic volatility might suggest. For example, sometimes a major global event can interrupt most mergers that are then in process, causing dramatic losses for arbitrage managers who had previously had low volatility. Unrealistically low volatility could be a sign of pricing problems or even fraud.

### **Reduced Liquidity**

Does the portfolio include increases in Level 3 holdings that have not been made part of a side pocket? Has there been a dramatic addition to Level 2 holdings or an increase in the concentration of holdings that can be impacted by the same occurrence in the market? These can be deep yellow flags, especially if investor redemption provisions permit a sizable influx of redemption requests at the same time. We need to ensure the compatibility of the portfolio’s liquidity with *our* liquidity—the fund’s redemption provisions for LPs.

### **Regulatory Risk**

Could the fund be hurt seriously if regulations changed? For example, some funds were hurt in 2008 when the shorting of certain stocks was suddenly banned, which led to dramatic rallies in heavily shorted stocks. Funds whose active strategies run counter to government policy or popular opinion are more vulnerable to this special risk.

### **Rapid Growth**

Has there been rapid growth in the fund’s assets? This can be a yellow flag, especially if the fund’s strategy includes an area of low market liquidity, where additional assets can make it hard for the fund to sell its large holdings in a market downturn. Also, have the fund’s staff and other resources grown appropriately to manage the added assets? It is best if funds grow more slowly and add resources organically ahead of needs.



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## LESSONS FROM HEDGE FUND ACCIDENTS (CONTINUED)

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### Other Investors

We should keep an eye on the composition of the fund's investor base. Is there an increase in the percentage of investors who are funds of funds, which may be hit with their own redemptions by investors who are ready to redeem at the first instance of concern? What proportion of a hedge fund's investors are eligible for redemption during the coming year? Even if the portfolio is relatively liquid, large redemptions can be disruptive, often peeling off the portfolio's most liquid holdings.

### Change in Vendors

Has there been a change in the administrator, auditor, valuation expert, placement agent, or prime brokers? If so, the reason may be benign, but it pays to check.

### Hubris

As we meet with the manager, do we sense a confidence on his part that he knows more than the market, that he's on a can't-lose strategy? Such over-confidence, and the lack of humility and flexibility that goes with it, can be hubris and a yellow flag. While visiting, we should also be sensitive to the dynamics among the manager's staff members, paying special attention to the body language of the risk manager.

### Unexpected Losses

Has the fund recently had a greater loss (or less of an increase) than we would have expected from its strategy, given recent market conditions? If so, that's a time to speak with the manager and work to understand what caused the difference from expectations.

We have mentioned a number of yellow flags. No one yellow flag may be severe enough to cause us to send in a redemption notice. But a combination of them may be. Ultimately, we need to ask ourselves continuously the same key question that we asked at the outset:

*Considering the fund's leverage and liquidity, how well will the fund be able to withstand a black swan event?*

A further challenge: Do we as investors have the discipline to remain continuously objective and flexible? As the inimitable Roy Neuberger once said, "It is OK to fall in love with a woman, but not with an investment."

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## NO GUARANTEES

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Unlike our *Best Practices* paper on "Due Diligence" in 2010, this is not a white paper on manager selection. We have tried here only to help investors avoid funds with a higher propensity to fail. We have examined what can go wrong and what clues, however subtle, are available during the due diligence and monitoring processes. We pay special attention to our responsibilities after we have made the investment.

One of the frustrating aspects, however, is that we may do a first-rate job of due diligence and still, on rare occasions, be invested in a fund that fails. Things happen. We can dramatically reduce the chances of an accident, but there is obviously no iron-clad guarantee. Investing is risky. Some strategies are designed to be closer to the edge.



On the other hand, just because none of our portfolio's hedge funds has ever failed, that does not mean we have done our due diligence properly. We may simply have been lucky. Many hedge funds during the decade through 2007 may have been equally at risk of failure in the event of a 2008-style market crash but may have been just lucky that a market crash didn't occur during those years.

We must also face another fact. Depending on how conscientious we are, our due diligence and monitoring are likely at times to lead us to pass up—or redeem from—some highly rewarding alternative investment opportunities. We must assess our own appetite for risk and over time hone our own judgment.

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#### WHEN ACCIDENTS HAPPEN

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No matter how thorough our due diligence, we may still have holdings in a hedge fund that suspends redemptions, imposes a gate, or is forced to close. What can we do then?

We might take the following steps:

- Work with our legal and compliance departments to review the fund's offering documents to see what rights or options we may have. Our lawyer might confirm that we have few if any options to accelerate redemptions.
- Meet with the manager to understand:
  - What has happened?
  - What will be the wind-down process?
  - When can we expect payouts, and over what time period?
  - When will audits become available?
  - What fees will be charged during the wind-down?

Unless necessary, it's often best to keep our lawyer out of direct communication with the manager. Direct dialogue with the principals will likely be more productive.

- Inform our constituents' board or its investment committee as well as its senior management. (Or, if ours is a fund of funds, inform our clients.)

Getting an understanding of these questions and developing open communication with the manager may not make us feel any better, but they will help with our planning and our future monitoring of the wind-down.

## AVOIDING MISTAKES IN PRIVATE MARKETS

Private markets investments—such as venture capital, buyout funds, and private real estate—don't self-destruct in the same way that a hedge fund can. By definition, a private markets fund doesn't allow investors any liquidity until its assets are sold. But there are many private market investors who have received payouts totaling only a small fraction of their contributions, and those payouts have often dribbled in over an extended period of years. That's a massive accident to the investor. How can we as investors avoid such mistakes?

Unlike hedge funds, if we see an accident coming we can't redeem because we are usually locked up for 10 years or more, unless we are willing to sell our interest to a buyer of secondary interests, usually at a significant discount. Thus manager selection and due diligence are more important than ever. Moreover, due diligence on the overall investment environment may be even more important by waving us away from the space altogether.

One large, prestigious institutional investor, the Kauffman Foundation<sup>10</sup>—whose private equity portfolio was ranked in the top quartile among private equity investors—recently analyzed its 100 investments in venture capital partnerships over the last 20 years. It reached the following conclusions about its “poor returns”:

- Half of its venture capital funds failed to return invested capital.
- 62% failed to achieve returns greater than a corresponding investment in the Russell 2000 index.

- Only 20% achieved returns that were more than 3% per year greater than those of the Russell 2000, and half of that 20% began investing prior to 1995.

Kauffman identified the following failures in its decision-making process that led to its disappointing results (and we have added a few comments of our own):

- Creating buckets to fill.
  - Kauffman set asset allocation targets for its venture capital portfolio and tried to invest in the best available opportunities to achieve those targets. With private investments, where we require a major premium return over public markets to justify their illiquidity, we as investors should be opportunistic—investing only in the rare opportunities that we believe can achieve our targeted return. This means being patient, without worrying about a bucket to fill.
- Relying on a fund's prior quartile returns relative to other venture funds begun in the same vintage year.
  - Kauffman found that prior quartile returns are often misleading. Notwithstanding the expectation of low J-curve returns in a fund's early years, many funds are able to make a quick sale of a successful investment that will place the fund in a high quartile. At that point, the general partner may begin to raise another fund. But that quartile ranking is based on a small percentage of the fund's invested capital, and returns on the remainder of its invested capital are often far less satisfactory.

<sup>10</sup> The Ewing Marion Kauffman Foundation issued a paper in May 2012 titled “Lessons from 20 Years of the Kauffman Foundation's Investments in Venture Capital Funds and The Triumph of Hope over Experience.”

- Failure to judge returns against public markets.
  - There seems no point in investing in an illiquid fund unless we as investors can expect an ultimate return at least 3 to 5% per year higher than what we could earn on an investment in public securities or funds investing in public securities. Very few investors try to benchmark their private investment returns against what they could have earned if all of their cash flows had been in or out of an appropriate public security index.
- Investing in venture capital funds that were too large.
  - If a venture capital manager is successful in its first fund, it often raises a second fund that is a little larger, and if that's successful, a still larger fund—until it eventually raises a fund larger than \$500 million. Kauffman found no success by venture capital funds larger than \$400 million, and it will limit its future investments to funds smaller than that size.
- Unwillingness to contest a general partner's terms for fear of rocking the boat.
  - The Kaufmann paper says that typical fees of 2 and 20<sup>11</sup> are misaligned because—among other things—they motivate the firm to raise bigger funds to lock in fee-based income. The firms focus on generating high short-term IRRs by flipping companies rather than committing to the long-term growth of a start-up. Kauffman believes a fairer option than the 2% management fee is a budget-based fee built on the firm's operating expenses, perhaps offset by a higher performance fee.

- The paper asks why investors, in negotiating with venture capital firms, don't insist on terms whereby (a) all capital that investors contributed to the fund is returned first, followed by (b) a preferred return (as is common in mid-market buyout funds), and (c) only then begin the split of profits between the GP and the LPs.

The currently favorable terms attract many managers to private equity, including the best in the business. Many other managers, however, are motivated by the high prospective compensation to establish private equity funds. As shown in the Greenwich Roundtable's 2011 white paper on "Managing Complexity," there was a difference of 37 percentage points *per year* between 1st and 4th quartile funds in both venture capital and buyout funds during the nine years 2002-10. The challenge for investors is to distinguish the best from the rest.

The Kauffman Foundation intends to continue investing in a select group of venture capital funds but to limit its commitments to firms with strong expected performance relative to the public market alternative. Kauffman is looking for partnerships where it can negotiate better alignment of terms.

The concept of benchmarking a private markets fund against a public alternative is not one that is commonly pursued, but it is one based on sound logic. Many investors believe they can avoid the roller coaster ride of the public markets by investing in private markets. But those investors may be kidding themselves, because public market volatility is constantly

<sup>11</sup> Typical venture capital fees are a management fee of 2% of committed capital plus a performance fee of 20% of net profits on each venture.

## AVOIDING MISTAKES IN PRIVATE MARKETS (CONTINUED)

but silently affecting the sale price of private equity. In the end, the net long-term rate of return is what counts. Moreover, public equity gives investors the opportunity to rebalance periodically—a valuable advantage.

It can be insightful to apply this concept to private real estate. Because of the different ways they are valued, the NCREIF<sup>12</sup> index of private real estate funds has had a low correlation with the NAREIT index of public real estate funds. But over long intervals of time, they have had about the same annual returns. As of the end of 2011 the NCREIF index had outperformed the NAREIT over the last 5 or 15 years, but the NAREIT index had outperformed over the last 10 or 20 years.

What annual return margin should we expect from private real estate to justify the illiquidity? If we benchmarked our private real estate portfolios against the NAREIT alternative, probably a relatively small minority of private portfolios would have been able to justify their illiquidity.

### **DUE DILIGENCE**

Earlier, in discussing warning signs for mistakes with hedge funds, we identified a number of things to look for in our initial due diligence, besides evidence of the manager's expertise. Some of the warning signs are the same for private markets:

#### **Manager's Own Investment**

We need to make sure that the manager and key staff people are investing meaningful proportions of their wealth in their fund, considering the nature of the fund. We need to know that the managers have a lot to lose personally if the result of their fund is disappointing.

#### **Background Checks**

The integrity of the managers is, of course, a *sine qua non*. But it is also important to meet with them personally and understand how they interact together. The Kauffman Foundation says it now asks venture capital partners for their firm's economics and compensation structures. General partners tell them they understand the logic about why this information is critically important to limited partners, but many GPs still refuse, citing the long queue of potential investors waiting to invest with them.

#### **Operations**

As with hedge funds, due diligence is just as important with respect to the firm's chief financial officer, its administration, its service providers, and its auditor.

<sup>12</sup> The National Council of Real Estate Investment Fiduciaries Property Index measures returns on private real estate funds, unlevered and before fees.

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## Leverage

Especially for real estate firms, leverage can be a source of disaster if the fund happens to take on more leverage than can survive the kind of shut-down of lending facilities that occurred in the 2008 era. During that era many a real estate fund was forced to hand over to its lenders the keys to some of its properties. We should know up front the amount of leverage that the fund plans on, sources and terms of its borrowing, and the availability of loan rollovers when necessary.

## Terms and Conditions

We need to review and negotiate terms and conditions in private markets as assiduously as we do with hedge funds. And it is probably even more important to ensure that the terms include key man clauses covering everyone who is crucial to the success of the fund.

Perhaps our best indication on whether to avoid a private markets fund is *due diligence on the investment climate, on the strategy, and on private markets altogether*. Outsized returns usually come when managers can influence the outcome. In the early days of the leveraged buyout strategy the manager gained control of a bloated industrial company, took it private, cut the fat, improved operations, hired new managers, aligned their incentives, and brought the healthier company public again. LPs earned returns far above public market benchmarks. But 30+ years of this activity has left fewer ripe buyout candidates. An abundance of capital chasing less attractive deals is at best a recipe for underperformance. *Outsized returns come from investing in areas where there is currently a scarcity of capital.*

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## MANAGER MONITORING

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As investors in private markets funds, we get just one chance to avoid mistakes—up front. But in the succeeding years we still must follow closely the progress of the partnership so we are prepared when issues arise on which we must act. We must be prepared to vote if the general partner recommends extending either the investment period or the term of the fund, or proposes an action that would otherwise be a conflict of interest. At times, as when a vote is triggered by a key man or other provision of the partnership agreement, limited partners must decide whether or not to continue the partnership.

A further reason to monitor our private equity investments well is to gather information and insights for our decisions when future investment opportunities arise with the same manager or with others in the same industry or strategy.

And, of course, if a buyer of secondary interests in private funds should offer to buy our interest in a fund, we need to be knowledgeable enough to evaluate his offer.

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Investors in private markets might care to consult the principles established by the Institutional Limited Partners Association (ILPA). This organization has developed a set of well-thought-out principles regarding alignment of interest, governance, and transparency for investors in private markets. These principles are readily accessible at [www.ilpa.org](http://www.ilpa.org).



## APPENDIX: HOW ACCIDENTS ARE AVOIDED ELSEWHERE

As mentioned in our Introduction, we were inspired to write this white paper partly by the publication *Accidents in North American Mountaineering*. As we think about the principles of avoiding accidents in investing, we find it insightful to review how people in other crucial areas of human endeavor avoid accidents. As examples, let's look at mountaineering, healthcare, and commercial aviation. These are areas where tremendous effort has been successfully devoted to accident prevention. What can we learn from them?

They all involve checklists, which ensure a disciplined approach. Investors need checklists as well, but not to follow blindly. When we deviate from our checklist, we must be prepared to explain to our stakeholders why we have deviated, and why any resulting increased risk is worth taking.

### Mountaineering

In most mountaineering accidents, clues as to how they could have been avoided were so obvious that they should have been seen and heeded. Human factors are the leading cause of accidents, hence much training focuses on psychology, proper training, and effective decision making.

- Psychological factors include peer pressure, individualism, overconfidence, low confidence, over-reliance on technology, misperception of risk, and impaired objectivity.

- Lack of proper training leads to rookie mistakes—poor judgment such as in charging ahead while thinking “it’s not that bad.” Novice climbers don’t have a clearly defined plan or clearly identified roles for team coordination.
- Effective decision making includes planning and checklists. Checklists start with monitoring the mountain, weather trends, and climbers’ health. They include a preferred route and backup plans as surprises occur along the way.

The emphasis is on the disciplined use of checklists, the need to stay continuously objective, and to stand ready to pursue a backup plan as circumstances change.

### Healthcare

In healthcare, accidents or treatment errors are often a matter of life and death. In the last 10 years hospitals have made great strides in reducing human errors. Their cultural changes and their improved use of data have reduced accidents such as:

- Surgical—operating on the wrong appendage, wrong person, or wrong procedure.
- Procedural—for example, giving a patient with a heart implant an MRI that stops his heart from working.
- Medication—the wrong pill to the wrong patient, or the wrong dose.

Best practices now call for three separate departments that report to senior hospital management and work together to prevent errors:

- Program Quality Department
- Risk Management Department
- Patient Safety Department

Culturally, every employee is now considered a risk manager. The major lesson is to have clearly written and understandable sets of rules and protocols, and stick to them. They include multiple layers of checks, such as many eyes and ears checking each patient on numerous occasions, monitoring the patient 24/7, and using time outs when an incident occurs to allow the team to re-assess the situation. Combined, they create a culture that identifies problems before they are serious and improves the processes to deal with them.

Do our investment staffs have the oversight to become aware of potential problems in our alternatives? Are we confident that the managers of our alternative investments have sound risk management rules and an adequate organization to enforce them? Do we learn from each fund to improve our processes?

### Aviation

The world's remarkable record of safety in commercial aviation is a result of the unwavering discipline of following priorities, checklists, and procedures. Pilot training mandates three priorities—aviate, navigate, and communicate, in that order. The systems built into pilot checklists are designed to have double, sometimes triple, redundancy in the most important systems.

Failure to work from the checklists and/or not following team coordination procedures are the cause of most aviation incidents that can lead to an accident. Fortunately, most incidents don't lead to an accident, because everyone follows proven procedures as soon as an incident occurs:

- One person flies the airplane.
- A second reads the checklists in the various manuals and begins troubleshooting.
- A third communicates with operations on the ground.
- If the team can't fix the problem, the pilot declares an emergency, and the FAA Traffic Control gives the plane priority to land at the closest airfield.

Most accidents can be traced to human error—failing to follow the checklists and established procedures.

\* \* \*

As we investors put money into alternative investments, do we have checklists and procedures that we follow with unswerving discipline in order to avoid accidents?



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