# Madoff: A Riot of Red Flags

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**Abstract:** For more than seventeen years, Bernard Madoff operated what was viewed as one of the most successful investment strategies in the world. This strategy ultimately collapsed in December 2008 in what financial experts are calling one of the most detrimental Ponzi schemes in history. Many large and otherwise sophisticated bankers, hedge funds, and funds of funds have been hit by his alleged fraud. In this paper, we review some of the red flags that any operational due diligence and quantitative analysis should have identified as a concern prior to investing. We highlight some of the salient operational features common to best-of-breed hedge funds, features that were clearly missing from Madoff's operations.

*"I know Bernie. I can get you in."*

A former friend of us

The man had an impeccable reputation on Wall Street. He was on the short-list of guests to every family birthday, anniversary, bar mitzvah, wedding and graduation. His firm was ranked as one of the top market makers in NASDAQ stocks. His solid and consistent track record generated a mixture of amazement, fascination, and curiosity. Investing with him was an exclusive privilege—a clear sign that one had made it socially. Bernard Madoff (hereafter: Madoff) was a legend. Admired by most, venerated by some, Madoff was a great success, so great that very few could dare criticize him without putting their careers in jeopardy. His house of cards nevertheless collapsed on December 11, 2008, when news broke that the FBI had arrested him and charged him and his brokerage firm, Bernard L. Madoff Investment Securities, LLC (hereafter: BMIS), with securities fraud. According to the SEC's complaint, Madoff himself informed two of his senior employees that his investment advisory business was "just one big lie" and "basically, a giant Ponzi scheme".

Hedge fund failures usually generate a great deal of press coverage. The Madoff case was no exception. According to the *Wall Street Journal*, the trouble began when Madoff suffered reversals. Rather than admit losses, he decided to pay out existing investors with money coming in from new ones. Things then got worse as redemptions increased and new investor money dried up.

While his story seems eerily reminiscent of the dramatic fall of the $450 million Bayou Funds in August 2005, the size of the potential loss is likely to be far greater: up to $50 billion according Madoff himself. The SEC investigations have just started and are likely to last several years, given the complexity of the case. The ability to invest with Madoff was officially not open to all, but the list of potential victims has been thrown into the media spotlight and seems to be growing with the speed and force of a hurricane. It includes charitable organisations, pension funds and well-to-do individuals, celebrities, as well as numerous investment professionals, reputable banks, hedge funds and funds of hedge funds. As of January 6, 2009, more than 8,000 claim forms had been mailed to Madoff customers seeking protection under the Securities Investor Protection Act.

All Madoff investors should in retrospect kick themselves for not asking more questions prior to investing. As many of them have learned, to their regret, there is no substitute for due diligence. Indeed, as discussed in this article, there were a number of red flags in Madoff's investment advisory business that should have been identified as serious concerns and warded off potential clients.

## HISTORICAL REVIEW

Born on April 29, 1938, Bernard L. Madoff graduated from Far Rockaway High School in 1956. He attended Hofstra University Law School but never graduated. In the early 1960s, he created BMIS with an initial capital of $5,000 earned from working as a lifeguard during the summer and installing refrigeration systems.

## From brokerage to advisory

Initially, BMIS was a pure brokerage business. It quoted bid and ask prices via the National Quotation Bureau's Pink Sheets and executed OTC transactions on behalf of its clients. Very rapidly, the firm embraced technology to disseminate its quotes and started focusing on electronic trading. In the 1980s, Madoff discovered that NYSE Rule 390 allowed him to trade NYSE-listed stocks away from the floor, which members of the NYSE could not do. Madoff therefore listed as a member of the then near-defunct Cincinnati Stock Exchange (CSE) and spent over $250,000 upgrading the CSE computers, transforming it into the first all-electronic computerised stock exchange.

Armed with the technology to trade faster, cheaper and longer hours, BMIS went after order flow. Initiating a controversial practice, BMIS paid other brokers $0.01 per share to execute their retail market orders, while still ensuring quality execution. Given that NYSE specialists were charging for order flow, this legal kickback rapidly convinced other brokers to redirect to BMIS a significant share of the trading volume, creating what was known as "the third market". Later on, BMIS was also one of the five broker-dealers most closely involved in developing the NASDAQ Stock Market, where Madoff served as a member of the board of governors in the 1980s and as Chairman of the Board of Directors.

By 1989, BMIS was a market maker handling more than 5% of the trading volume on the NYSE. But brokerage was becoming an increasingly competitive business and margins were shrinking. Madoff therefore decided to create a separate investment advisory firm, which he located one floor below his brokerage business.

In 2008, BMIS had $700 million of equity capital and handled approximately 10% of the NYSE trading volume. Its 200 employees (100 people in trading, fifty in technology, and fifty in the back office) were split between New York and London, but only twelve of them were assigned to the famous split-strike conversion strategy devised by Madoff.

### Madoff Feeders

It was often written in the press that Madoff operated a hedge fund or a series of hedge funds. This is factually incorrect—there has never been a "Madoff fund" and Madoff never claimed to be a hedge fund manager. Madoff simply claimed that BMIS was able to execute a conservative strategy that would deliver annual returns of 10 to 12% per year by actively trading a very specific portfolio of stocks and options. But access to this much-coveted strategy was by invitation only—merely being rich was not in itself sufficient.

According to its Form ADV, at the beginning of 2008, BMIS managed twenty-three discretionary accounts for a total of $17 billion. Most of these accounts belonged to feeder funds which were marketed to investors worldwide by numerous intermediaries or used as underlying assets for structured products, leveraged investments, and so on. This very specific structure meant that Madoff's final investors were not direct customers of BMIS. They had to invest via one of the approved feeders which in turn had to open a brokerage account and delegate to BMIS the full trading authority of their portfolios. As a result, investors were able to due diligence their feeder funds but not BMIS. As we will see shortly, this was an essential feature of the Madoff scheme.

### The split-strike conversion strategy

The strategy officially used by Madoff was in theory remarkably simple—a combination of a protective put and a covered call. It can be summarised as follows:

1. Buy a basket of stocks highly correlated to the S&P 100 index.

2. Sell out-of-the-money call options on the S&P 100 with a notional value similar to that of the long equity portfolio. This creates a ceiling value beyond which further gains in the basket of stocks are offset by the increasing liability of the short call options.
3. Buy out-of-the money put options on the S&P 100 with a notional value similar to that of the long equity portfolio. This creates a floor value below which further declines in the value of the basket of stocks are offset by gains in the long put options.

The terminal payoff of the resulting position is illustrated in exhibit 1. Option traders normally refer to it as a “collar” or a “bull spread”. Some traders also call it a “vacation trade” because you can establish the position and not worry about it until the expiration date of the options approaches. Madoff referred to it as a “split-strike conversion”.

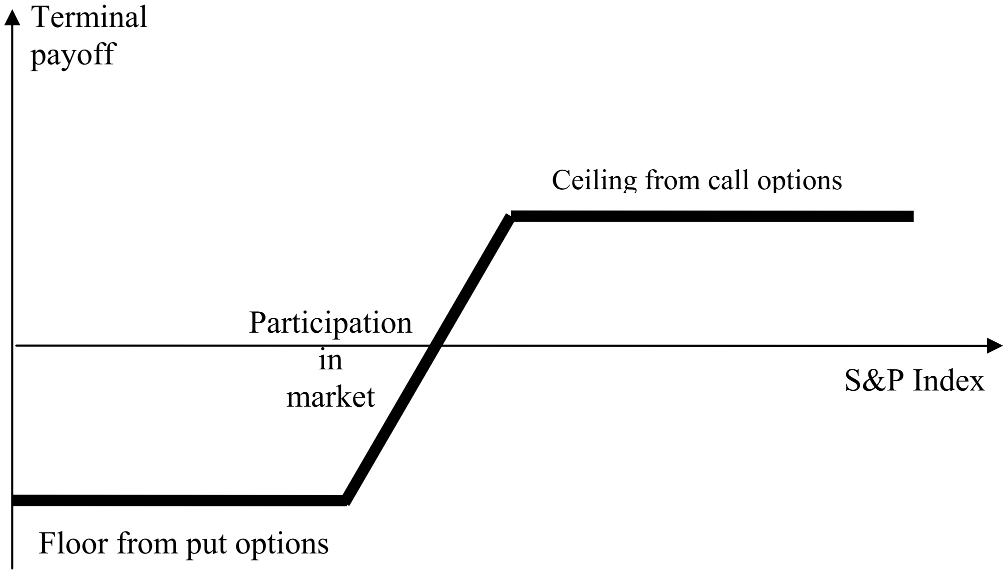


**Exhibit 1: Unbundling the split-strike conversion portfolio**

The aim of collars is usually to provide some downside protection at a cost lower than that of buying puts alone—the cost of purchasing the puts is mitigated by the proceeds from selling the calls. In addition, collars are commonly used to exploit the option skew, *i.e.*, a situation in which at-the-money call premiums are higher than the at-the-money put premiums. Overall, the cost of a collar varies as a function of the relative levels of the exercise prices, the implied volatility smiles of the underlying options, and the maturity of the strategy. Officially, Madoff claimed to implement this strategy over short-term horizons—usually less than a month. The rest of the time, the portfolio was allegedly in cash.

| | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Year |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **1990** | | | | | | | | | | | | 2.8% | **2.8%** |
| **1991** | 3.1% | 1.5% | 0.6% | 1.4% | 1.9% | 0.4% | 2.0% | 1.1% | 0.8% | 2.8% | 0.1% | 1.6% | **18.6%** |
| **1992** | 0.5% | 2.8% | 1.0% | 2.9% | -0.2% | 1.3% | 0.0% | 0.9% | 0.4% | 1.4% | 1.4% | 1.4% | **14.7%** |
| **1993** | 0.0% | 1.9% | 1.9% | 0.1% | 1.7% | 0.9% | 0.1% | 1.8% | 0.4% | 1.8% | 0.3% | 0.5% | **11.7%** |
| **1994** | 2.2% | -0.4% | 1.5% | 1.8% | 0.5% | 0.3% | 1.8% | 0.4% | 0.8% | 1.9% | -0.6% | 0.7% | **11.5%** |
| **1995** | 0.9% | 0.8% | 0.8% | 1.7% | 1.7% | 0.5% | 1.1% | -0.2% | 1.7% | 1.6% | 0.5% | 1.1% | **13.0%** |
| **1996** | 1.5% | 0.7% | 1.2% | 0.6% | 1.4% | 0.2% | 1.9% | 0.3% | 1.2% | 1.1% | 1.6% | 0.5% | **13.0%** |
| **1997** | 2.5% | 0.7% | 0.9% | 1.2% | 0.6% | 1.3% | 0.8% | 0.4% | 2.4% | 0.6% | 1.6% | 0.4% | **14.0%** |
| **1998** | 0.9% | 1.3% | 1.8% | 0.4% | 1.8% | 1.3% | 0.8% | 0.3% | 1.0% | 1.9% | 0.8% | 0.3% | **13.4%** |
| **1999** | 2.1% | 0.2% | 2.3% | 0.4% | 1.5% | 1.8% | 0.4% | 0.9% | 0.7% | 1.1% | 1.6% | 0.4% | **14.2%** |
| **2000** | 2.2% | 0.2% | 1.8% | 0.3% | 1.4% | 0.8% | 0.7% | 1.3% | 0.3% | 0.9% | 0.7% | 0.4% | **11.6%** |
| **2001** | 2.2% | 0.1% | 1.1% | 1.3% | 0.3% | 0.2% | 0.4% | 1.0% | 0.7% | 1.3% | 1.2% | 0.2% | **10.7%** |
| **2002** | 0.0% | 0.6% | 0.5% | 1.2% | 2.1% | 0.3% | 3.4% | -0.1% | 0.1% | 0.7% | 0.2% | 0.1% | **9.3%** |
| **2003** | -0.3% | 0.0% | 2.0% | 0.1% | 1.0% | 1.0% | 1.4% | 0.2% | 0.9% | 1.3% | -0.1% | 0.3% | **8.2%** |
| **2004** | 0.9% | 0.5% | 0.1% | 0.4% | 0.7% | 1.3% | 0.1% | 1.3% | 0.5% | 0.0% | 0.8% | 0.2% | **7.1%** |
| **2005** | 0.5% | 0.4% | 0.9% | 0.1% | 0.6% | 0.5% | 0.1% | 0.2% | 0.9% | 1.6% | 0.8% | 0.5% | **7.3%** |
| **2006** | 0.7% | 0.2% | 1.3% | 0.9% | 0.7% | 0.5% | 1.1% | 0.8% | 0.7% | 0.4% | 0.9% | 0.9% | **9.4%** |
| **2007** | 0.3% | -0.1% | 1.6% | 1.0% | 0.8% | 0.2% | 0.2% | 0.3% | 0.2% | 0.5% | 1.0% | 0.2% | **6.4%** |
| **2008** | 0.6% | 0.1% | 0.2% | 0.9% | 0.8% | -0.1% | 0.7% | 0.7% | 0.5% | -0.1% | | | **4.5%** |

**Exhibit 2: Track record of Fairfield Sentry Ltd, one of the feeder funds into Madoff split-strike conversion strategy.**

Madoff's promise was to return 8-12% a year reliably, no matter what the markets did. A sample track record is shown in exhibit 2. Although results could vary from one feeder to another as a result of fees, leverage and other factors, all of them did in general post persistently smooth positive returns. Over his seventeen-year track record, Madoff apparently delivered an impressive total return of 557%, with no down year and almost no negative months (less than 5% of the time).

The stability of this track record, combined with its positive skewness, was one of the most compelling arguments for investing with Madoff. Returns were good but not outsized, and their consistency made it seem as if the outcome of the strategy was almost predictable. A perfect investment for a conservative portfolio and an even more perfect investment to leverage for an aggressive one… As an illustration, exhibit 3 compares the cumulative performance of the strategy and that of the S&P 100 index. Returns are comparable (11.2% p.a. for the Fairfield Sentry Ltd fund versus 8.5% p.a. for the S&P 100) but the difference in volatility is striking (2.5% p.a. for the fund versus 14.8% for the S&P 100). The difference in maximum drawdown is also great (-0.6% p.a. for the fund versus -49.1% for the S&P 100).

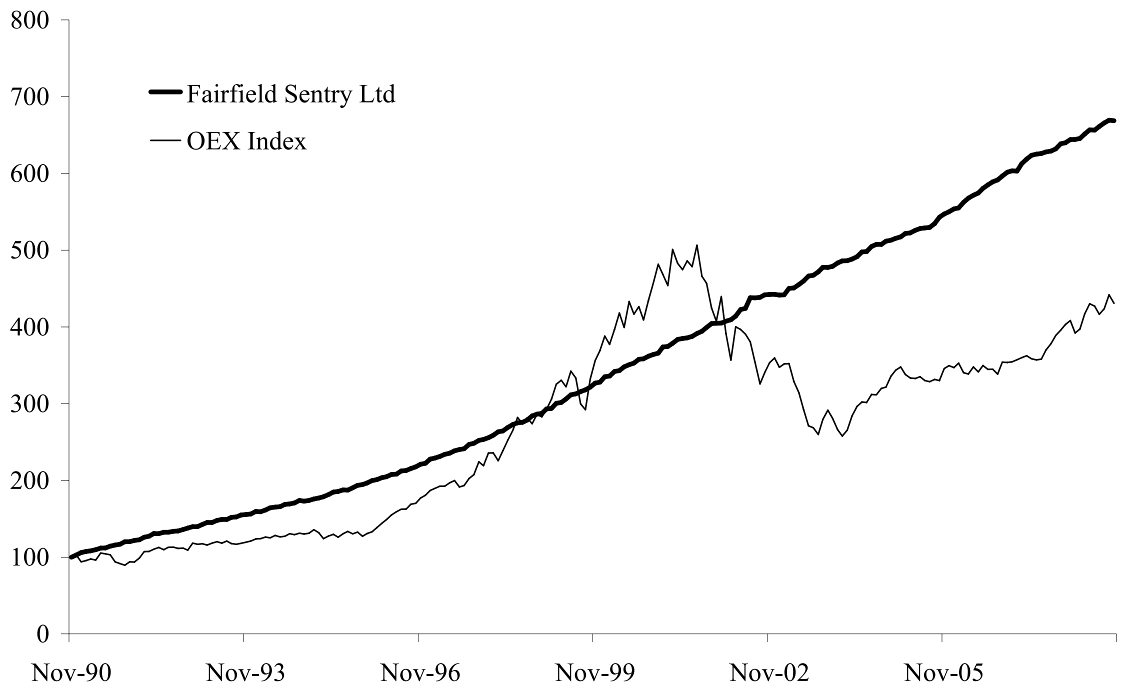


**Exhibit 3: Comparing Fairfield Sentry Ltd and the S&P 100 (OEX).**

**The Fraud**

On December 10, 2008, Madoff confessed to his two sons, his brother and his wife that his investment advisory business was "a giant Ponzi scheme". In the evening, his sons turned him in to US authorities. Madoff was arrested the next day and charged with securities fraud. The SEC filed a complaint in federal court in Manhattan seeking an asset freeze and the appointment of a receiver for BMIS.

## A LONG LIST OF RED FLAGS

Hedge fund failures should always be seen at best as an opportunity to revisit and eventually update one's own due diligence process and at worst as a way to learn useful lessons from past mistakes. In that respect, the Madoff case is truly fascinating. The alleged Ponzi scheme, if any, was probably extremely difficult to detect. But the list of due diligence red flags was so long and unsettling that it should have deterred potential investors.

### Operational Red Flags

Lack of segregation amongst service providers

As discussed by Lhabitant (2006), a typical hedge fund uses a network of service providers that normally includes an investment manager to manage the assets, one or several brokers to execute trades, a fund administrator to calculate the NAV, and some custodian(s)/prime broker(s) to custody the positions. These service providers work together but should normally be independent of each other and their functions segregated, as this segregation plays a major role in reducing the risk of fraud. In a few cases, such as with some more complex or less liquid strategies, investors may accept some dependence between service providers, but the potential conflicts of interest should then be mitigated by the implementation of regular external independent controls and documented procedures.

With Madoff, all the above-mentioned functions were performed *internally and with no third-party independent oversight*. Madoff traded his managed accounts through his affiliated broker-dealer BMIS, which also executed and cleared these trades. More importantly, all assets were custodied and administered within his organisation, which also produced all documents showing the underlying investments. In a traditional hedge fund, this should have been a clear no-go for all investors, as it makes performance manipulation possible and substantially increases the risk of the misappropriation of assets, since there is no third party independently confirming the legal ownership of the fund's securities. In a managed account run in parallel with a hedge fund, the fund manager may control the account but the client's bank or custodian normally conducts administration and periodically provides the client with the net value of the assets. But with Madoff, this was reasonable because he was a broker-dealer running a series of managed accounts. The absence of independently calculated net asset value was normal—with a broker, you get only brokerage statements. And the requirement to custody with Madoff also seemed reasonable, given his core business activities. Finally, managed accounts were the only possible vehicles to access the strategy.

Of course, most Madoff feeder funds had independent and reputable service providers, which was reassuring for final investors. These providers had no choice but to verify the existence and accuracy of the trading information back to Madoff himself and his auditor rather than to an independent broker or custodian.

Obscure auditors

BMIS was audited by a small accountancy firm called Friehling and Horowitz. Although this firm was accredited by the SEC, it was virtually unknown in the investment management industry. Sandwiched between two medical offices, it operated from a small 550-square foot office in the Georgetown Office Plaza in New City, New York. Its staff consisted of Jerome Horowitz (a partner in his late seventies, who lived in Miami), a secretary, and one active accountant (David Friehling). The firm was not peer reviewed and there was therefore no independent check on its quality controls.[1] Why BMIS, with its large asset base, chose such a small auditor should clearly have been questioned. Additional investigation would also have turned up that every year since 1993 Friehling and Horowitz had declared in writing to the American Institute of Certified Public Accountants that it was conducting no audits.

By contrast, Madoff feeder funds were audited by large and reputable audit firms such as PricewaterhouseCoopers, BDO Seidman, KPMG or McGladrey & Pullen. This probably gave confidence to investors that everything was under control. These firms were of course entitled to rely on the audit reports of other auditing firms such as Friehling and Horowitz. Should they have verified that the other auditor was qualified? The question is still open.

Unusual fee structure

Since BMIS was not operating a fund, the way the firm was rewarded for its investment services should also have thrown up red flags. Officially, there was no management or performance fee at BMIS—the sole form of compensation, according to its Form ADV, was a "market rate" commission charged on each trade. As a result, the distributor of the feeder funds could charge final investors a management and/or a performance fee—usually 2% and 20%.

[1] New York was one of the six states that let auditors practice without undergoing peer review. Shortly after the Madoff scandal, it changed its law and made peer reviews mandatory for accounting firms with three or more accountants.

This unusual fee model should have been questioned by investors. If Madoff's scheme for making money was really so good, why sell it at all? Why would BMIS forfeit hundreds of millions of dollars of management fees and performance fees every year and let a few third-party distributors get them while investors were lining up to give him money?

Heavy family influence

Key positions of control at BMIS were held by members of the Madoff family. Madoff's brother Peter joined the firm in 1965. He was a senior managing director, dead of trading and chief compliance officer for the investment advisor and the broker-dealer businesses. Madoff's nephew, Charles Wiener, joined in 1978 and served as the director of administration. Bernard Madoff's oldest son, Mark, joined the family team in 1986 and was director of listed trading. His youngest son, Andrew, started in 1988 and was director of NASDAQ. Peter's daughter and Bernard's niece, Shana, joined the firm in 1995 and served as the in-house legal council and rules compliance attorney for the market-making arm on the broker-dealer side.

These heavy family links should also have been questioned by investors, as they compromised the independence of the functions performed by such individuals. This is an obvious weakness of internal controls meant to safeguard investors' assets from fraudulent activities.

No Madoff mention

At the feeder funds, several of the private placement memorandum and marketing materials never mentioned the Madoff or BMIS names. They just disclosed that they allocated assets to "one manager who uses a 'split-strike' strategy". Final investors were therefore not necessarily aware that they were investing with Madoff. When questioned on this point, the feeder distributors usually answered that they were prohibited by contract from mentioning the Madoff or BMIS name. And Madoff was also very reluctant to disclose his actual assets under management. This was highly surprising, given the success of the strategy. A simple comparison of track records would easily show that there were multiple Madoff feeders, so why bother?

Lack of staff

In its regulatory filing, BMIS indicated that it had between one and five employees who performed investment advisory functions, including research. Simultaneously, it disclosed $17 billion of assets under management. Who could believe that such a large sum of money could really be managed by such a small group of people?

SEC registration

Madoff registered as an investment advisor with the SEC only in September 2006. Until then, he avoided registration and its subsequent disclosure rules by using a regulatory loophole that allowed investment advisors with fewer than fifteen clients not to register. Madoff had fewer than fifteen feeders in his strategy and was allowed to count each feeder as one client, regardless of the number of final investors. So he could operate under the radar and avoid random SEC audits.

In 2006, the SEC changed the rules and required advisors to count each final investor as a client for registration purposes rather than counting one fund as a single client. Even so, Madoff still did not register. It was only after an SEC investigation that he admitted he had more than fifteen final clients and therefore had to register. Later, when the SEC lifted its counting rule, Madoff did not de-register as many other managers subsequently did. Many of his investors may have been reassured by his decision to remain registered, but what they probably did not know was that Madoff's post-registration investment advisory business had never been investigated.

Extreme secrecy

According to investors, access to Madoff's offices for on-site due diligence was very limited or even denied. Madoff refused to answer questions about his business or about his investment strategies. He never provided any explanations or monthly performance attribution, even informally, and even threatened to expel some investors who asked too many questions. Such an attitude is very unusual in the hedge fund world. Even the most secretive hedge funds are usually willing to demonstrate to investors that they have quality operations and provide operational transparency. None of this was available with Madoff.

Paper tickets

While most brokers provide their customers with timely, electronic access to their accounts, Madoff never did so. Feeder funds that had some level of transparency on the investment strategy were only able to receive paper tickets by mail at the end of the day. On some occasions, the paper tickets had no time stamps, so that the exact order of the purported transaction was unclear—officially, protection from others who might try to replicate it or trade against it. This practice, combined with the lack of segregation of key functions noted above, provided the end-of-the-day ability to manufacture trade tickets that confirmed investment results.

Conflict of interest

Another potential conflict of interest was that BMIS was simultaneously a broker/dealer and a market maker in the stocks traded, depending on the strategy.

**Investment Red Flags**

A black-box strategy

Madoff's purported track record was so good and so consistent that it should have been suspect. When applied systematically with a monthly rollover, a split-strike conversion strategy can be profitable over long periods but it will also generate some down months and exhibit significant volatility. This was not the case for Madoff, who was down in only ten of 215 months and had very low volatility. No other split-strike conversion manager was able to deliver such a consistent track record.

Investors have brought about several possible explanations for this seeming anomaly. Let us mention some of them:

- *Market intelligence*: Madoff could have added value by stock picking and market timing. Indeed, the results of a basic split-strike conversion strategy can be improved by carefully selecting the basket of stocks to purchase, adjusting the exercise prices of the options to the volatility smiles and entering or exiting the strategy dynamically. Madoff's edge would then have been his ability to gather and process market-order-flow information from the massive amount of order flow BMIS handled each day, and then use this information to implement optimally his split-strike option strategy. However, that this edge would not once over seventeen long years have failed him is highly unlikely.

- *Front running*: Madoff could have used the information from his market-making division to trade in securities ahead of placing orders he received from clients. However, this practice would have been illegal in the US.
- *Subsidised returns*: Madoff could have used the capital provided by feeders as pseudo equity; for instance, he could have leveraged positions without explicitly having to borrow, or done more market making by purchasing additional order flow. In exchange, some of the profits made on the market making could have been used to subsidise and smooth the returns of the strategy. However, Madoff himself dismissed this explanation, as his firm used no leverage and had very little inventory.

So, it seems that no one has been able to explain how Madoff's results had been achieved for so long. The only solution might be that we have to call it a "black box".

Questionable style exposures

Lhabitant (2006) suggests a variety of factor models and dynamic benchmark portfolios to analyse hedge funds on the basis of their track records. But none give particularly illuminating results when applied to Madoff's track record[2]. One of them, nevertheless, should be mentioned. As illustrated by Markov (2008), when applying style analysis, the combination of factors that best explains the returns of Madoff's strategy was a dynamic portfolio of long S&P 100, long cash, short the CBOE S&P 500 Buy-Write Indices and long the CBOE S&P 500 Put-Write Index.[3] The explanatory power remains very low, but these results are very strange. While Madoff's split-strike conversion required a long put, short call

[2] Note that we discarded the use of the CSFB Tremont Market Neutral index in the analysis, as almost 40% of it consists of Madoff feeders.

[3] Buy-Write indices represent the returns of a hypothetical covered-call, or buy-write, strategy. That is, one goes long the S&P 500 and simultaneously sells call options on it. Two versions of these indices have been developed, the BMX (using at-the-money calls) and the BXY (using out-of-the money calls). The Put-Write Index (PUT) represents the performance of a hypothetical strategy that would sell at-the-money S&P 500 Index put options collateralised by a portfolio of Treasury bills.

and long index position, they suggest that Madoff was doing exactly the inverse, i.e. selling puts and buying calls, of what he claimed to be doing. This contradiction should at the very least have triggered some questions, so that his track record could be understood from a quantitative perspective.

Incoherent 13F Filings

In the US, investment managers who exercise investment discretion over $100 million or more of assets must make quarterly disclosures of their holdings on a 13F form with the SEC These 13F Forms, which are publicly available, contain the names and “class of the securities, the CUSIP number, the number of shares owned and the total market value of each security” (SEC 2004). Interestingly, while Madoff had over $17 billion of positions, his 13F form usually contained only scatterings of small positions in small (non-S&P 100) equities. Madoff’s explanation was that his strategy was mostly in cash at the end of each quarter to avoid publicising information concerning the securities he was trading on a discretionary basis. Again, this explanation beggars belief; if Madoff had been doing as he said there would have been massive movements on money markets.

Market size

Executing a split-strike conversion strategy with over $17 billion of capital would have been prohibitively expensive using S&P100 options, which are much less used than S&P500 options. Given the daily trading volume, option prices would have experienced sharp moves in the wrong direction for Madoff. None of that happened. When questioned about the discrepancy between the daily trading volumes and his alleged needs, Madoff supposedly explained that he primarily used OTC markets. But that explanation is unconvincing. First, there are not so many counterparties that could be consistently ready to sell cheap insurance every month—and spend seventeen years losing money. Second, the counterparty credit exposures for firms that could have done such trades were likely to be too large for these firms to approve. And third, some of these counterparties would have hedged their books, and there was no indication of such movements. Not surprisingly, the names of these alleged counterparties could never be confirmed, and no option arbitrageur ever saw one of Madoff's trades. This should have suggested that Madoff could not be doing what he said he was doing.

**Some saw it coming**

In the close-knit hedge fund community, noise and rumours are plentiful. Unless they can be rebutted swiftly and decisively, with clear and verifiable evidence, they should not be ignored, particularly when they last for several weeks or months. In the case of Madoff, the press was for once ahead of regulators, politicians and professional investors. For instance, a May 2001 article in the now defunct semi-monthly industry publication MAR/Hedge titled "Madoff tops charts; sceptics asks how" seriously questioned Madoff's track record, operations and secretive investment methods. A subsequent detailed analysis in Barrons titled "Don't ask, don't tell" raised the same question and concluded with: "some on Wall Street remain sceptical about how Madoff achieves such stunning double-digit returns using options alone". But these apparently triggered no reaction from regulators and did not lower the enthusiasm for investing with Madoff.

The most tenacious Madoff opponent is likely to be Harry Markopolis, a former money manager and investment investigator. In May 1999, Markopolis started a campaign to persuade the SEC's Boston office that Madoff's returns could not be legitimate. But his reports were laden with frothy opinions and provided no definitive evidence of a crime, so the SEC paid little attention. Markopolis nevertheless continued his repeated requests, which culminated in November 2005 with a seventeen-page letter titled "The world's largest hedge fund is a fraud”. In this letter, Markopolis listed twenty-nine red flags that suggested again that Madoff was either front-running his customer orders or operating “the world’s largest Ponzi scheme”. This time, the SEC’s New York office followed up on Markopolis’s tips and investigated BMIS and one of its feeders. It found no evidence of front running or of a Ponzi scheme, but a few technical violations surfaced that were rapidly corrected.[4] Since these violations “were not so serious as to warrant an enforcement action”, the case was closed. In early 2008, Markopolis tried again to capture the attention of the SEC’s Washington office, but obtained no response. These repeated failures by regulators to pursue investigations will certainly be examined and discussed extensively in the near future, but Markopolis’s letters should have been a warning sign for investors.

Finally, several banks refused to do business with Madoff. One of them in particular black-listed Madoff in its asset management division and banned its brokering side from trading with BMIS. Several professional advisors and due diligence firms attempted to analyse the strategy and/or some of its feeder funds and struck them from their list of approved investments. No need for complex techniques: as an illustration, Madoff would have been considered a “problem fund” using the Brown, Goetzmann, Liang and Schwarz (2008) methodology, which only uses public information from the Form ADV. But some investors allowed greed to overrule advice and continued to flow in in good faith, trusting only what they saw, *i.e.*, the returns.

[4] In particular, Madoff “agreed to register his investment advisory business and Fairfield agreed to disclose information about Mr. Madoff to investors”.

## CONCLUSIONS

The Madoff collapse is likely to remain as an expensive lesson in due diligence. Some may have thought the returns were too good to pass up or Madoff too respectable to look into. Perhaps some gained confidence from personal relationships with the manager or word-of-mouth endorsements from friends—former friends, perhaps. All chose faith over evidence. The reality is that the warning signals were there and the salient operational features common to best-of-breed hedge funds were missing. Let us hope that this will serve as a reminder that the reputation and track record of a manager, no matter how lengthy or impressive, cannot be the sole justification for investment.

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