UNITED STATES BANKRUPTCY COURT
SOUTHERN DISTRICT OF NEW YORK

In re: BERNARD L. MADOFF INVESTMENT SECURITIES LLC. Debtor.	Adv. Pro. No. 08-01789 (BRL) SIPA LIQUIDATION (Substantively Consolidated) Adv. Pro. No. 10-5287 (BRL)
IRVING H. PICARD, Trustee for the Liquidation of Bernard L. Madoff Investment Securities LLC. Plaintiff. v. SAUL B. KATZ, et al., Defendants.	11-CV-03605 (JSR) HBP)

INITIAL EXPERT REPORT OF
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1. This report is offered pursuant to Federal Rule of Civil Procedure 26(a)(2) and is authored by Dr. Steve Pomerantz, president of Steve Pomerantz LLC, an economic and financial consulting firm located in Princeton, New Jersey.[1] My curriculum vitae and a list of court and deposition appearances are attached to this report as Appendix I.

I. Qualifications

2. My experience in the investment community spans over 25 years dating back to 1986. During that time, I held positions in research and management for fixed income, equities, derivatives and alternative investments at several major firms including Morgan Stanley, Citibank, Weiss Peck & Greer LLC, and New York Life Investment Management. As part of my work at these investment management firms, I provided portfolio management and risk management services to both traditional and alternative investments.[2] In addition, I provided investment and asset allocation advice to a wide range of clients, including both high net worth individuals and very large institutional clients.

3. The high net worth individuals for whom I have worked and consulted had varying levels of assets from several million to more than a billion dollars. These high net worth individuals typically have similar sophistication levels as institutional clients. The institutional clients for which I have worked include pension funds, defined contribution plans and insurance companies, many with assets of several billion dollars. Over my 25 years of experience I have performed due diligence on hundreds of investment vehicles

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[1] Duff & Phelps, LLC, a financial advisory and investment banking services firm ("D&P"), was retained in this matter by Irving Picard, appointed as the Trustee for the liquidation of Bernard L Madoff Investment Securities, and Steve Pomerantz, LLC was retained by D&P. Employees of D&P worked under my direction and supervision in the preparation of work supporting my opinions contained herein.

[2] In general, portfolio management refers to the construction of portfolios designed to achieve certain objectives, while the role of risk management is to generally assess market risk and monitor that the objectives are being met, and any constraints placed on this process are satisfied. Stephen A. Ross, Randolph W. Westerfield & Jeffrey Jaffe, Corporate Finance 261 (New York: McGraw Hill, 7th ed. 2005). Anil Bangia, Francis X. Diebold, Til Schuermann & John D. Stroughair, Modeling Liquidity Risk, with Implications for Traditional Market Risk Measurement and Management Section I, 3-13 (The New York University Salomon Center Series on Financial Markets and Institutions, Vol. 8, 2002).

including both registered and unregistered investment adviser accounts, managed/separate accounts, hedge funds, and mutual funds.

4. During my career, I have been a portfolio manager at several firms for fixed income, equity and hedge fund accounts. While at Weiss Peck & Greer, I served on Investment Policy Committees of both traditional and alternative products and on the firm-wide Product Review and Executive Committees. These committees supported institutional, mutual and hedge fund accounts as well as high net worth investor accounts. Among the firm's clients that I supported were numerous defined benefit plans, defined contribution plans and trusts. In each of those cases, my responsibility to the client was as a fiduciary. In this role, I was subject to varying degrees of due diligence by either the clients or their consultant representatives.[3] Potential investors investigated the products with which I was affiliated, and inquired about me personally. I also responded to questions generated by the types of analyses I performed for this assignment, which has contributed to my knowledge of due diligence practices. For example, I responded to due diligence inquiries from advisor platforms such as the Merrill Lynch Consults in 2000-2002 and I am therefore familiar with some of their due diligence practices.

5. In addition, I have spoken at investment seminars, presenting on various areas of portfolio management, risk management, asset allocation, hedge fund products, and securities pricing. I received a Ph.D. in Mathematics from the University of California at Berkeley and a B.A. in Mathematics from Queens College of the City University of New York. I have taught courses in statistics, probability, operations research and finance at the undergraduate and graduate levels.

6. I have offered testimony in a variety of venues on matters similar to those to be discussed here. In particular, I have testified in tax court and bankruptcy court on the role of derivatives, similar to those to be discussed here, in an investment program. My

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[3] Due diligence is a process whereby, among other things, an investor initially investigates the attractiveness of an opportunity, assesses the quality of the management team, assesses the key risks associated with the opportunity, and continues to evaluate investments on an ongoing basis. Due diligence has any number of elements associated with the analyses. Those elements are discussed throughout the body of this report.

testimonies on derivatives related to the use of puts, calls and collars substantially the same as those at issue in this matter, and how those securities were used in tax shelters. In those cases, my opinions centered on an analysis of these transactions and their associated economic merits. I have also testified numerous times on due diligence and investment performance-related issues for both traditional and alternative investments. The due diligence activities on which I have testified include some of the same activities I performed as part of this assignment, including, but not limited to, peer analysis and performance attribution.

7. The opinions that I offer are based on my review of the documents in this case as well as my training, education and experience in the investment management industry.

A. Recent Qualitative and Quantitative Due Diligence Experience

8. Since 2000, numerous investment management firms with assets under management ("AUM") from tens of millions to several billions of dollars and high net worth individuals with several million to well more than a billion dollars in assets have hired me as a consultant to advise on risk management and portfolio strategy. I have advised, conducted due diligence on behalf of, and/or consulted with numerous high net worth individuals and institutional clients. In addition to investors that I worked for while employed by numerous investment management firms.[4] I have directly consulted for institutional and high net worth clients including, but not limited to:

- QED: an equity money management firm;
- Verizon Communications: a global telecommunications company with a multi-billion dollar pension fund;[5]
- International Fidelity Insurance Company: a global insurance company founded in 1904;[6]

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[4] Throughout my career I have worked for the following investment advisers: Morgan Stanley Asset Management, Nomura Securities, Weiss, Peck & Greer, and New York Life Investment Management.

[5] Verizon Communications Inc. Securities and Exchange Commission, Form 10- K, at 76 (Fiscal Year ended December 31, 2008).

- Richard Goldman: an entrepreneur and philanthropist; and
- Frank Halowell: a venture capitalist.

9. In my capacity as a consultant, I develop risk models and pricing models, advise on portfolio strategy issues and perform qualitative and quantitative due diligence on traditional and alternative investments. I have also authored articles related to investment management including "Mutual Fund Advisory Fees: New Evidence and a Fair Fiduciary Duty Test," and "The Pursuit of Alpha in a Fund of Hedge Funds."

10. I have consulted or worked for numerous hedge funds such as Galileo, Andover and Lotus, and provided due diligence and risk management services to established hedge funds of funds. These funds of funds maintained diversified portfolios of 10-30 individual hedge fund investments.[7] My responsibilities were to monitor and evaluate the current holdings of the fund as well as continually evaluate new opportunities for investment.

11. I routinely develop valuation and trading models for proprietary use, and perform due diligence on potential hedge fund investments from both a quantitative and qualitative perspective. From a quantitative perspective, I perform peer analysis, reverse engineering, performance attribution and other quantitative analyses related to investment and portfolio performance.[8] From a qualitative perspective, I analyze, among other things, the philosophy, the pricing structure, the business infrastructure, and the people involved in the

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6 Our Company, IFIC Suretyship (last visited November 20, 2011), http://www.ific.com/our-company/company.html (accessed November 20, 2011).

7 A fund of funds is an investment vehicle that invests in other funds. John Downes & Jordan Elliot Goodman, *Barron's Finance & Investment Handbook* 51 (New York: Barron's, 5th ed. 1998).

8 Peer analysis is a comparison of different investment managers' performance metrics that use the same or similar investment strategies. Edward J. Stavetski, *Managing Hedge Fund Managers* 71, 79 (Hoboken, New Jersey: John Wiley & Sons, 2009).

Reverse engineering is the process of replicating, as best as possible, the investment strategy being pursued. Judith Wiesinger, Didier Sornette & Jeffrey Satinover, *Reverse Engineering Financial Markets with Majority and Minority Games using Genetic Algorithms*, Swiss Finance Institute, Research Paper Series Number 10-08 (2010), http://ssrn.com/abstract=1553821.

Performance attribution examines why a portfolio performed as it did and involves determining the sources of a portfolio's performance. Forbes Financial Glossary, http://www.forbes.com/tools/glossary/searchWord.jhtml.

investment vehicle.

B. Review of Investment Vehicles Invested With Madoff

12. It is through my due diligence practice that I encountered entities that were exposed to the Investment Advisory business of Bernard L. Madoff Investment Securities ("BLMIS").[9] The first time I encountered BLMIS was in 2005 when a funds of funds engaged me to perform due diligence on dozens of funds in which the funds of funds was invested as well as to evaluate other potential investments. The funds of funds were not directly invested with Madoff, but one of my client's funds was invested with a feeder fund that was invested with Madoff.[10] As a result, my due diligence activities included an analysis of the feeder fund and BLMIS.

13. As part of my review, I was not provided access to BLMIS customer statements, trade confirmations, or any other documents provided by BLMIS to its investors. Nor was I provided access to anyone at BLMIS in order to ask questions. I spoke with the head of the feeder fund, and inquired as to whether I could speak to the ultimate investment adviser (i.e., Bernard L. Madoff ("Madoff")). I was told that I would not be able to meet with him.

14. I was, however, provided with two pieces of information: (1) a one-page document detailing the purported strategy that Madoff followed, namely the split-strike conversion ("SSC") strategy;[11] and (2) monthly returns for the feeder fund from 1997 to 2005. Using this limited information, I performed typical quantitative calculations used to evaluate investment performance, such as peer analysis, performance attribution, and reverse engineering. Based even on this limited data, I observed definite warning signs that

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[9] Throughout this report "BLMIS" will refer to the Investment Advisory ("IA") business of BLMIS. There is also a broker-dealer business of BLMIS. If I am referring to the broker-dealer business I will explicitly indicate as such.

[10] For purposes of this report, a BLMIS feeder fund is an investment vehicle that invested with BLMIS.

[11] *See* Appendix III. The split-strike conversion strategy as purportedly employed by Madoff involves buying a security, buying a put option on that security, and selling a call option on that security. Gonder Memorandum (August 24, 1990) (STESAH0007078). All discussion and opinions related to Madoff's SSC strategy, BLMIS trading activities, or positions in Sterling BLMIS accounts are assumed herein to be purported, including all references to, for example, "shares," "securities held" or "trading."

Madoff was not engaged in his purported investment strategy.

15. In particular, I observed that the stated monthly returns, which were continuously positive month after month, were entirely inconsistent with the stated investment strategy. I was convinced that Madoff was not performing any form of split-strike conversion strategy and made this opinion known to my client. At the time, I was convinced and communicated that Madoff was either engaged in front-running or some other fraud.[12] Despite the limited information available to me, the results of my due diligence were compelling. I therefore made a recommendation to divest or not invest any additional funds with the BLMIS feeder fund. It is my best recollection that my client divested in part, but not in whole, from the BLMIS feeder fund in which it was invested.

16. In 2008, I encountered BLMIS again when another fund of funds engaged me to perform due diligence on a potential investment with a BLMIS feeder fund (a different BLMIS feeder fund than I had investigated in 2005). I was provided with: (1) marketing materials indicating that the feeder fund was invested with Madoff, (2) marketing documents explaining the SSC strategy, and (3) monthly returns for the BLMIS feeder fund from 1997 to 2008. By 2008, I had formed a strong opinion that Madoff was not following his SSC strategy.[13] I informed my client that I believed Madoff was not engaged in the strategy he purported to follow, and was likely engaged in either front-running or some other fraud. My client ultimately decided not to invest in the BLMIS feeder fund.

II. Background

17. On December 11, 2008, Madoff was arrested by federal agents for violation of the criminal

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[12] Front-running "refers to a situation in which a trader, knowing that an order is about to come in, trades in the same direction before the anticipated order is executed." Fang Cai, *Does the Market Conspire Against the Weak? An Empirical Study of Front Running Behavior During the LTCM Crisis* 1, Board of Governors of the Federal Reserve System - Division of International Finance (May 2002).

[13] Between 2005 and 2008, I continued to monitor the returns, as provided by the client, of the BLMIS feeder fund I had evaluated first in 2005.

securities laws.[14] Simultaneously, the Securities and Exchange Commission ("SEC") filed a complaint commencing district court proceedings against Madoff and BLMIS.[15] On December 15, 2008, the SEC combined its action with an application by Securities Investor Protection Corporation ("SIPC"), which alleged that BLMIS could not meet its obligations to its securities customers as they became due and thus needed protection under the Securities Investor Protection Act ("SIPA").[16] Also on December 15, 2008, Judge Stanton granted the SIPC application, appointed Irving H. Picard as the Trustee for the liquidation of BLMIS, appointed Baker & Hostetler LLP ("Baker") as counsel for the Trustee, and removed the case to the bankruptcy court.[17]

III. Assignment Scope and Methodology

18. I have been retained through D&P by Baker, counsel for Irving H. Picard, Trustee ("Trustee") for the Substantively Consolidated SIPA Liquidation of BLMIS and Madoff, to: (i) describe the investment management industry, including hedge funds, managed accounts, investment advisory services, institutional and high net worth investors, as well as the forms and elements associated with both quantitative and qualitative due diligence, including operational due diligence, transaction level due diligence, investment adviser due diligence, and ongoing/monitoring of investments due diligence; (ii) determine whether, in my opinion, certain facts I reviewed constituted red flags or warning signs under the customs and practices of the investment management industry; (iii) determine whether, in my opinion, any such red flags were indicia of fraud such that a reasonable investor similarly situated to Sterling Equities ("Sterling")[18] would have performed additional due

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14 Press Release, United States Attorney, Southern District of New York, *Investment Adviser and Former Chairman of Nasdaq Stock Market Arrested for Multibillion Dollar Ponzi Scheme* (New York: December 11, 2008), http://www.justice.gov/usao/nys/pressreleases/December08/madoffarrestpr.pdf.

15 *SEC v. Madoff*, No. 08-CV-10791, Complaint, ECF No. 1 (S.D.N.Y. December 11, 2008).

16 Press Release, Securities Investor Protection Corporation, *Liquidation Proceedings for Bernard L. Madoff Investment Securities LLC Undertaken by Securities Investor Protection Corporation* (New York: SIPC, December 15, 2008).

17 *SEC v. Madoff*, No. 08-CV-10791, Order, ECF No. 4 (S.D.N.Y. December 15, 2008).

18 Sterling Equities—collectively, the partners and the entities that they own, operate and control—will hereinafter be referred to as "Sterling." Sterling was controlled by its general partners: Saul Katz, Fred Wilpon, Michael

diligence; and (iv) opine on what industry practice due diligence conducted in real time would have revealed.

19. I am compensated for my work at a standard rate of $750 per hour plus out-of-pocket expenses. My compensation is in no way contingent upon my opinions or the testimony I intend to offer in this case.

A. Information Sources

20. Baker provided access to information, including but not limited to the following:[19]

- A database containing more than 28 million documents representing, among other things: (1) customer statements; (2) bank account statements and other documents obtained through third-party subpoenas; (3) internal documents and correspondence from BLMIS; and (4) other documents, data, information and correspondence found on BLMIS's computer systems;

- A database containing customer statement information compiled from underlying supporting documentation and bank account information compiled from underlying supporting documentation such as bank statements and wire transfer documents;

- Electronic media and records obtained from BLMIS's offices and storage facilities including nearly 19,000 backup tapes, hard drives, cell phones, Blackberry devices and other electronic information sources;

- Hard copy documents housed in a BLMIS-rented warehouse in Queens, NY containing more than 11,000 large banker boxes of documents and information;

- Deposition transcripts for person(s) deposed by Baker; and

Katz, Richard Wilpon, David Katz, Thomas Osterman, Jeffrey Wilpon, Arthur Friedman, Gregory Katz, Marvin Tepper, and the late Leonard Schreier (the "Sterling Partners"). As in this report Sterling Partners refers to some or all of the partners.

[19] My access to documentation that was collected by the Trustee and made available to me was not limited in any manner and allowed me to search for information and documentation that both supported the opinions contained herein as well as countervailing evidence, if any. A complete listing of the documents considered is included in Appendix II of this report.

- Visit to the BLMIS offices at 885 Third Avenue in Manhattan.

21. In addition to the information to which I was provided, additional information was obtained where necessary for the analyses from publicly-available sources. A complete listing is included in Appendix II of this report. To the extent that additional information is discovered, I may amend or supplement my opinion as necessary.

B. Conduct of Information Review and Analysis[20]

22. The work conducted in connection with the assignment was planned, supervised and staffed in accordance with applicable professional standards. The work that was conducted included, but was not limited to:

    - Review and analysis of documents, emails, etc;
    - Review and analysis of customer statements, trade confirmations and other related documentation;
    - Review and analysis of certain purported trading activity for Sterling; and
    - Review of deposition transcripts and other sworn testimony.

23. FTI Consulting, Inc. ("FTI"), hired directly by Baker, performed certain work and baseline analyses at the direction and supervision of Baker. Such was conducted largely before my retention. To the extent any such data was relied upon or support analyses or opinions herein, the accuracy of the data was tested to ensure reliability.

24. Given the sheer volume of transactional data and documents in this investigation, a vast amount of analyses were performed using electronic computer analytics and data mining

[20] Records, documents and other information for certain periods were no longer available because the time period in question spans nearly 23 years (1985-2008). Nonetheless, the opinions contained herein are supported by available documentation, which include 28 million documents, and by alternative analysis where historical documentation was no longer available.

algorithms. Further, advanced computer models were developed and utilized for certain quantitative conclusions. Such analytics and models were developed and utilized consistent with applicable professional standards.

IV. Sterling Is a Sophisticated Investor

25. My conclusions and opinions as summarized below assume that the Sterling is an experienced investor. All the documents and testimonies I have reviewed, and in connection with my own experiences working with high net worth individuals, support the assumption that Sterling is a sophisticated investor.[21] The documents in the record that I have reviewed reveal, among other things, that Sterling is an active investor with a "high" level of financial expertise, sits on boards of major corporations, including financial institutions, and manages a diverse network of real estate, sports-related and other assets. The following are a few examples of facts from the record I have reviewed which support my assumption:

    a) Sterling is described as "active hedge fund investors for 20 years" with a "deep understanding of hedge funds;"[22] Saul Katz and Fred Wilpon indicated that they had a

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[21] I am aware of a number of definitions related to the sophistication of an investor. For example, the Municipal Securities Rule Making Board defines a sophisticated investor as "... having sufficient resources, market knowledge, and experience to understand and bear the risks involved in a particular investment." *Definition of Sophisticated Investor*, Municipal Securities Rulemaking Board (November 2, 2011), http://www.msrb.org/msrb1/glossary/view_def.asp?param=sohpisticatedinvestor. In addition, "accredited investors," under SEC regulations can be defined as investors, including high net worth individuals having any of these characteristics, among others: (1) an ERISA employee benefit plan if it has $5 million in assets; (2) a partnership with assets greater than $5 million; or (3) income in excess of $200,000 (individually) or $300,000 (jointly) or personal net worth in excess of $1 million (excluding residence). Accredited Investors, U.S. Securities and Exchange Commission (last visited November 21, 2011), http://www.sec.gov/answers/accred.htm. The SEC also recognizes "qualified purchasers" as defined under the Investment Company Act of 1940 as owning not less than $5 million in investments. My understanding of a sophisticated investor is consistent with these definitions.

[22] "The Sterling Stamos Difference." Sterling Stamos Marketing Document (July 2004) (SSMSAA1876781).

"high" level of "financial expertise;"[23] and Arthur Friedman testified that he was an "astute investor;"[24]

b) Sterling's Fred Wilpon was a Director at Bear Stearns from 1993 to 2003,[25] and Member of the Metropolitan Regional Advisory Board of J P Morgan Chase;[26]

c) Sterling was a General Partner in Sterling Stamos, a hedge fund created by Sterling;[27]

d) Sterling maintains an internal bank from which money can be borrowed and paid back later.[28] The entity, referred to as Sterling Equities Funding ("SEF"), was created to "serve as the clearing house for the movement of funds and obligations among Sterling and its investments."[29] The interest rates charged by SEF are determined internally at Sterling;[30]

e) Sterling leveraged the lack of volatility in its BLMIS returns to create "double-up" accounts where Sterling would borrow $1 for every $1 in its account, invest these borrowed funds with Madoff, double the returns and earn a "vig" on the difference between the return generated by Madoff and the rate they paid on the loan;[31] and

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23 Know Your Customer Questionnaire - Fred Wilpon (undated) (SSMSAA2335309); Know Your Customer Questionnaire - Saul Katz (undated) (SSMSAA2335313).

24 Arthur Friedman Dep. 31:19-20, June 22, 2010.

25 *Sterling Equities: Fred Wilpon*, Bloomberg Businessweek (November 8, 2011), http://investing.businessweek.com/businessweek/research/stocks/private/person.asp?personId=555605&privcapId=37826059&previousCapId=21719&previousTitle=The%20McGraw-Hill%20Companies,%20Inc.

26 *Biography of Fred Wilpon* (November 4, 2011), http://www.allamericanspeakers.com/speakers/Fred-Wilpon/10612.

27 Arthur Friedman Dep. 622-624, June 29, 2010; Peter Stamos Dep. 60-63, August 19, 2010; Sterling Stamos fund overview (February 2005) (SSMSAA0026027-59 at 52).

28 David Katz Dep. 114-115, August 31, 2010.

29 Sterling Equities Presentation at 7 (February 4, 2009) (STESBG0000294).

30 Mark Peskin Dep. 61-62, 63: 11-13, July 29, 2010.

31 Mark Peskin Dep. 49-50, July 29, 2010; David Katz Dep. 264-265, September 1, 2010; Arthur Friedman Dep. 477, June 24, 2010. Sterling also monitored accounts to ensure that each was maximizing the opportunity to invest with Madoff. Sterling called it an "efficiency factor," and noted that based on Madoff's purported investment strategy, there was an efficiency to maintaining a certain level of investment in each account. Arthur Friedman Dep. 338-364, June 23, 2010.

f) Sterling owns the New York Mets (where it is involved in every financial decision made),[32] the regional television network SportsNet New York,[33] and owns or manages billions of dollars of real estate interests (having launched private equity funds for investing in and managing real estate).[34]

26. In my professional experience, investors with the sophistication of Sterling—similar to many high net worth individuals with whom I have worked—behave like institutional investors, for example, by performing quantitative and qualitative due diligence and by having a more robust and sophisticated understanding of the nature of financial markets, as well as understanding warning signs, i.e. red flags.

V. Summary of My Opinions

A. Red Flags

27. Based on my experience, my independent review of documents and testimony in the record to date, my own independent analysis, as well as customs and practices of the investment management industry, I have identified numerous facts and circumstances relating to Sterling's BLMIS investments, which I conclude were red flags that: (i) Madoff was not engaged in the strategy he purported to follow and were by their nature indicia of fraud that required additional qualitative and quantitative due diligence; (ii) were rife with the opportunity for Madoff to commit fraud; and/or (iii) were virtual impossibilities where the only rational or reasonable explanation was fraud. The evidence I have analyzed in connection with this case leads me to conclude, in accordance with industry customs and practices, as well as my own experience in conducting due diligence for clients, that the following were red flags:

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[32] Saul Katz Dep. 18-19, August 4, 2010; Fred Wilpon Dep. 23-24, July 20, 2010.

[33] Fred Wilpon Dep. 14, July 20, 2010.

[34] History of Sterling Equities, Sterling Equities (Accessed on November 8, 2011), http://www.sterlingequities.com/about/history.php. Among Sterling's buildings are the Lipstick Building (where BLMIS was headquartered) and the "crown roofed architectural gem" 450 Lexington Avenue in New York City. *Real Estate Weekly* (vol. 53, issue 23, January 17, 2007).

a) **Paper Statements:** Receiving only paper statements from BLMIS, on a time delay, and not being provided real-time access or electronic statements through 2008, despite BLMIS touting its technical expertise, as well as the customs and practices of the investment management industry towards electronic delivery of information;

b) **A Fee Structure that Made No Sense:** An extremely atypical fee structure at BLMIS;

c) **Impossible Prices:** Madoff buying and selling stocks and options in the mid-to-late 1980s at either impossible prices, or prices that were virtually impossible;

d) **Ponzi Insurance:** Learning that a business partner and friend bought insurance covering Madoff fraud, including Ponzi schemes (i.e. covering the possibility that Madoff was stealing their money);

e) **Public Questions About the Legitimacy of Madoff's Performance:** Financial industry articles questioning the legitimacy of Madoff's returns;

f) **A Strategy that Reaches an Unscalable Level:** Learning that BLMIS had billions of dollars in assets under management in a purported strategy that was unscalable to that level;

g) **Irrational Concerns About Disclosure:** Madoff being concerned about disclosures concerning Sterling's investments with BLMIS if Sterling Stamos filed to become a Registered Investment Advisor ("RIA");

h) **Total Returns for Sterling's BLMIS Investments v. The Market (2000-2002):** Sterling's cumulative returns are over 48 percent while the market's cumulative returns are down 27-44 percent for a 3-year period when the strategy should have produced returns significantly closer to the S&P 100 (i.e., Madoff's purported split-strike conversion strategy should have been more correlated to the S&P 100);

i) **Something Wasn't Right:** Tim Dick, a consultant, advised Sterling that he "couldn't make Bernie's math work- something wasn't right";

j) **Shifting Stories About How the Strategy is Implemented:** Being provided inconsistent information about how investment decisions were made at BLMIS, including the use or non-use of black boxes, and the use of a so-called investment committee;

k) **Targeting Bond Yields:** Madoff's returns were targeted to be a multiple of the 10-year bond yield, which is highly atypical in the industry;

l) **A Suspicious Transaction Outside Industry Custom:** Madoff offering to "loan" Sterling $54 million instead of returning money from Sterling's BLMIS accounts in response to a redemption request, as well as falsely documenting the transaction with minimal paperwork;

m) **The Bayou Ponzi Scheme:** Being provided with the reasons Sterling Stamos withdrew from Bayou and all of the red flags indicating Bayou was a fraud, many of which paralleled Sterling's BLMIS investments;

n) **Special Investment Opportunity:** Being offered, shortly after Bayou was revealed as a Ponzi scheme, a short-term "special investment" opportunity with a return that could be 50 percent better than current returns, but which required a new account and new money;

o) **Merrill Lynch and Sterling Stamos Say They Will Not Invest with Madoff:** Merrill Lynch would not invest with Madoff, and Sterling was told by Peter Stamos, a financial partner, that Sterling Stamos would not directly invest with Madoff;

p) **Lack of Credentials:** Madoff employed a limited number of people in BLMIS with no advanced education or training, purportedly managing and executing a highly sophisticated strategy with billions of dollars under management;

q) **Out-of-Range Trades:** Madoff buying and selling millions of shares of stock and options over an extended period of time at prices that could not have happened because no stock or option traded on that day at that price;

r) **Impossible Volumes:** Madoff buying and selling options at impossible volumes where the volume traded in Sterling's BLMIS accounts was more than the total daily traded volume in the options market;

s) **No Checks and Balances:** Lack of any third party controls such as a third party broker-dealer, custodian or administrator (i.e., BLMIS was its own "chief cook and bottlewasher");

t) **One Active Accountant Auditing Billions of Dollars:** BLMIS's auditor was a firm with one active accountant, purportedly auditing a multi-billion dollar investment management business;

u) **Above the Market:** Madoff generating an approximately 2 percent absolute return each time Madoff implemented the split-strike conversion strategy;

v) **Lack of Volatility:** The lack of volatility of Sterling's BLMIS returns being entirely inconsistent with the split-strike conversion strategy Madoff claimed to implement;

w) **Best Returns on a Risk-Adjusted Basis for Two Decades:** Sterling's BLMIS returns on a risk-adjusted basis were better than any peer hedge fund or mutual fund (including Gateway, a fund implementing a SSC strategy) over every 10-year period where information is available;

x) **Better than Buffett:** Sterling's BLMIS returns on a risk-adjusted basis were better than elite investment advisers, including Warren Buffett, over the available period of every investment adviser's returns;

y) **Outperforming The Market in Periods of Market Stress:** Sterling's BLMIS returns significantly outperformed the market across multiple periods of market stress throughout the 1990s and 2000s; and

z) **Buying Low/Selling High:** Buying shares at low prices and selling shares at high prices with a nearly statistically impossible consistency.

B. Opinions

28. My opinions are as follows:

1. Opinion No. 1: There Were Numerous Facts and Circumstances Relating to Sterling's BLMIS Investments and Relationship That Were Red Flags. Based on These Red Flags, Industry Customs and Practices Would Have Been to Conduct Further Due Diligence.

29. The red flags related to Opinion 1 are discussed in Section VIII.

30. Such a large number of warning signs over such a long period of time, in my experience, and consistent with industry customs and practices, required further independent due diligence. The red flags about which I am opining were not narrowly concentrated in any one particular area, but rather, cut across a spectrum of operational, process and performance-related issues. Due diligence is designed to specifically address and analyze these issues, as well as to robustly analyze fraud risk.

31. One reason to perform due diligence on BLMIS (and Madoff) would be to investigate the cause and source of the red flags and to understand the risks of the investment. In addition, due diligence needed to be performed to analyze the possibility if not probability of fraud associated with Madoff and his purported strategy. Red flags raise serious concerns about the sustainability of investment performance and business operations as well as the possibility of fraudulent activity. When red flags, either in isolation or cumulatively, are an indicia of fraud there is a heightened need for due diligence to verify those indicia of fraud. The due diligence can be specific to a particular red flag, can cover some or all qualitative and/or quantitative areas, or can be an all-encompassing evaluation of the adviser and strategy.

32. When presented with red flags it is not necessary, nor even customary, that the investors perform all or some of the requisite due diligence by themselves. In my experience, and consistent with industry customs and practices, sophisticated investors, including high net worth individuals, have the business acumen to identify red flags and make informed decisions about what to do upon identifying them. In response to red flags, such investors will, in my experience, either perform due diligence themselves, or engage dedicated consultants, experts, and/or specialists to perform the due diligence functions on their behalf, or undertake some combination of both.

2. Opinion No. 2: Due Diligence Consistent With Industry Customs and Practices Would Have Confirmed in Real Time that Madoff Could Not Have Been Legitimately Engaged in His Purported Investment Strategy and Therefore Was Running a Fraudulent Investment Advisory Business.

33. In response to the aforementioned red flags, further due diligence, consistent with industry customs and practices would have confirmed that Madoff could not have been delivering returns to investors like Sterling via his purported strategy.

34. The due diligence analyses contained in this report are inclusive of the ones I performed for clients in 2005 and 2008 when I evaluated BLMIS feeder funds. In particular, the volatility and correlation analyses contained herein are calculations that I performed then, and also performed again in connection with this assignment. My analysis for this assignment further affirmed my prior conclusion that Madoff could not have been engaged in the split-strike conversion strategy he purported to implement.

VI. Investment Management Industry

35. At the most fundamental level, the investment management industry includes investors, managers/advisers and service providers.[35] Customs and practices in the investment management industry are generally all in support of the primary investment goal: to

[35] I have used the terms "investment manager" and "investment adviser" interchangeably in this report and these terms are meant to be synonyms in all respects.

maximize reward while simultaneously limiting risk. The industry maintains checks and balances through the use of independent third-party providers for various services in part to help protect against fraud in the industry. The industry also recognizes that these checks and balances are insufficient as the only mean of protecting investments. Therefore, due diligence performed by any investor prior to making an investment decision and during the life of an investment, whether buying a stock or investing in a billion dollar hedge fund, is necessary to ensure that investments are achieving the right amount of reward with the commensurate level of risk.[36]

A. Overview

36. In addition to investors, whether sophisticated, high net worth, institutional or otherwise, the investment management industry generally consists of intermediaries between investors as well as between investors and investments. The multitude of intermediaries serving this market exists to: (1) advise on the allocation of capital between the various investment options; (2) advise on selection of transactions within the investment option; (3) execute the transactions; and (4) provide custody and record keeping services. Intermediaries include the following: broker-dealers, investment advisers, RIAs, hedge funds, and mutual funds.

37. These participants provide, or intermediate, a combination of advice and execution services in facilitating the invested capital to its destination. These entities may also manage client assets either on a pooled basis or on a separate account basis, where separate accounts can either be self-managed accounts (i.e., where an investor manages their own assets); or managed accounts (i.e., where an investor engages an adviser to manage its assets).

38. Service providers serve these intermediaries, managers, and investors in turn. Service

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[36] In addition to market risk, investors are concerned with many other risks including, but not limited to credit, counter-party, liquidity, and default risk. *Sound Practices for Hedge Fund Managers*, Managed Funds Association § 4, 4-12 and Appendix III, 7-30 (2007); *Counterparty Risk Survey 2009* 34, The Credit/Fitch Solutions (December 2009); Sherree Decovny, *Reining in Liquidity Risk* 28-29, CFA Magazine (vol. 21, no. 4, July-August 2010).

providers include custodians, auditors, prime brokers, administrators, and transfer agents.

39. The size of the investment management industry is typically measured by the size of the AUM in the industry. The sum total of AUM is the currency amounts that investors place with a fund or investment adviser. In general there are three sources of AUM that, when added together, constitute the investment management industry: (i) funds (e.g., hedge funds and other commingled vehicles); (ii) self-managed accounts; and (iii) managed accounts.[37] Assets invested in mutual funds and hedge funds, which comprise the majority of industry AUM, grew from roughly $500 billion in 1985, to over $20 trillion in 2008.[38]

B. Custody of Funds

40. The firm that has the legal responsibility for holding assets owned by an investor is called the "custodian" of those assets. When an individual manages his own funds (i.e., determining when and where to invest), and uses a broker-dealer ("BD") for purposes of executing transactions, that BD acts as the custodian. However, if an individual or institution entrusts funds to another entity (e.g., an investment adviser) to manage, it is common industry practice for an independent third-party custodian to hold the actual funds. Even though the investment adviser is deciding how best to invest the client funds, the funds and/or securities are held by a different entity (i.e., the custodian).[39]

41. The benefit of using a third-party custodian in these instances is clear – it acts as a check on the investment adviser. The involvement of multiple parties in the management of assets helps reduce the potential misappropriation of those assets by any of those parties. It is extremely rare for investment advisers to also maintain custody of their clients' assets

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[37] There is some overlap in these categories to the extent that a managed account or self-managed account invests in a hedge fund, mutual fund, or other commingled vehicle.

[38] Barry Eichengreen & Donald Mathieson, Hedge Funds and Financial Market Dynamics, International Monetary Fund, May 1998. Michael L. Goldstein & Jonathan Freedman, *The Future of Money Management in America: Key Issues Facing the Mutual Fund Industry*, Bernstein Research, December 5, 1997. Barclay Hedge (last visited Oct. 31, 2011), http://www.barclayhedge.com/research/indices/ghs/mum/Hedge_Fund.html. 2010 Investment Company Fact Book, at 182, 50 ed. Investment Company Institute, 2010.

[39] Securities may be held either in certificate form, or in "street name," i.e. aggregated with the custodian with beneficial owners accounted for by the custodian.

for this reason.

C. Roles

42. The responsibility of a broker-dealer is limited to the execution of a transaction. An investment adviser, by contrast, has the more far-reaching responsibility of the ongoing implementation of an investment strategy. Madoff had the sole and broad-based authority and responsibility for, among other things, determining the strategy, selecting the individual stocks to purchase, determining which options to incorporate into the SSC strategy, as well as the timing for entering and exiting the market. These are examples of the functions of an investment adviser and extend well beyond the authority and role of a discretionary broker.[40] Madoff was functioning as and serving in the capacity of an investment adviser for BLMIS customers including Sterling.

D. Investment Strategies

43. The ultimate goals for any investment strategy are to preserve capital and generate returns through cash flow received from the investment and/or capital appreciation. In general, within efficient and informed capital markets, the return of an asset or portfolio tends to be highly correlated to its underlying risk.[41] In this context, risk is typically defined as the variability of expected returns. Therefore the investor, whether high net worth, institutional or otherwise, typically weighs the added income and/or return against the incremental risk of a particular investment.

VII. Evaluating Investment Advisers

44. The evaluation of an investment adviser is critical because it allows investors to understand

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[40] Sterling characterized its BLMIS accounts as "discretionary brokerage" accounts in draft marketing materials for the 401(k) plan they sponsored for their employees. Discretionary Brokerage Account at Bernard L. Madoff Investment Securities, Arthur Friedman Dep. Ex. AF-34 (June 24, 2010) (STESAA0011998). A discretionary brokerage account is one in which the customer permits the broker to act on the customer's behalf in buying and selling securities. David L. Scott, Wall Street Words 108 (Boston, Ma.: Houghton Mifflin Company 2003).

[41] Geoffrey Hirt & Stanley Block, Fundamentals of Investment Management 7 (New York: McGraw Hill, 7th ed. 2003).

the adviser's investment process and determine whether the resulting investment fits their goals and risk tolerance. In addition, it allows the investor to make a determination about the longevity of the investment adviser and/or the strategy. Ultimately the investor is investing in a business, and evaluating the stability of that business is important, especially as it relates to sustainable operations. In this respect, the basic evaluation of an investment adviser is expected to identify signs or indicia of fraud.

45. The evaluation process is not limited to "unknown" investment advisers. The investment management industry is built on relationships, but it is not an industry where "blind trust" prevails. In my experience, high net worth and institutional investors typically follow the "trust but verify" approach given the risk to which an investor exposes himself or herself by investing money with an investment adviser. For example, if an investor, like Sterling, is invested predominantly with a single adviser the lack of diversification increases risk, and the need for ongoing and thorough evaluation increases in proportion. Sterling Stamos's marketing materials remind investors of the risks of investing with a single hedge fund manager.[42]

46. A key component of the evaluation process is due diligence. Due diligence is not a one-time event for investors. It has both an initial and an ongoing component. Ongoing due diligence monitoring is important in part because the adviser has the investor's money and because it is important to evaluate whether the performance is consistent with expectations and representative of what the investor was told before investing. In this manner, due diligence independently verifies what an investment adviser has told investors. Independent verification is a cornerstone of all aspects of due diligence.

47. In order to maintain consistent supervision over their investments, investors like Sterling perform monitoring activities. Typical monitoring activities include:[43]

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[42] "Sterling Stamos Security Fund, L.P." (February 2005) (SSMSAA00026027-59 at 32), stating that investing with Sterling Stamos will "mitigate the risk of [having a] single hedge fund manager."

[43] *Managing the Investment Managers*, CIBC Due Diligence Process (November 2009), http://www.renaissanceinvestments.ca/en/portfolio-managers/Due_Diligence_Whitepaper_e.pdf

- Regular meetings with the investment advisers;
- Regular peer reviews and benchmarking;
- Performance analyses against other advisers with the same investment management style;
- Periodic on-site visits;
- Completion of quarterly questionnaires; and
- Monthly portfolio analysis.

48. These activities are also consistent with the activities undertaken by Sterling's hedge fund Sterling Stamos as part of its ongoing monitoring of investments. For example, Sterling Stamos stated that its ongoing monitoring includes quarterly visits,[44] as well as analyses where: "monthly or bi-monthly performance is compared with the performance of the associated market/asset class to monitor Portfolio Manager performance against the opportunity set. Regression analysis, style drift analysis, and value-at-risk analysis are performed."[45]

49. Generally, the due diligence process (both before and after an investment is made) is designed to: (i) identify (as early as possible) any potential "red flags" or changes in the adviser and/or his organization, investment process, or philosophy, and (ii) identify and understand any indicia of fraud or changes to the risk profile of the invested assets. Whether investors (including high net worth and institutional) perform due diligence themselves or engage consultant to perform analyses for them, a common approach is to categorize the areas of focus for the due diligence. A comprehensive template or framework for conducting due diligence centers around the "Five Ps," where each P relates to a particular element of due diligence. The Five Ps are: People, Process, Portfolio, Performance, and Price.[46] The following is a discussion of the types of due diligence

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[44] "DeMarche Associates, Inc. Hedge Fund Manager Questionnaire," Sterling Stamos (SSMSAA018407-31 at 28)

[45] Sterling Stamos Security Fund, L.P., Marketing Supplement (October 2004) (SSMSAA00052064).

[46] The People category is sometimes referred to as Personnel, and the Process category is sometimes referred to as Philosophy. The origins of this framework were developed during the 1970s by Russell Investments, a leading advisory firm servicing individual and institutional investors. *Russell's Group Philosophy*, Russell Investment Group (October 2006). Other frameworks use the "P" acronym, though the number of "Ps" may differ.

typically performed in connection with each of these categories.

A. The Five Ps

1. People

50. Investors evaluate the personnel and qualifications of the investment adviser as much as the investment itself. This assessment includes the individuals with key roles, the reporting structure of the business, the hiring and termination processes, and whether all team members understand the philosophy and process they are supposed to be implementing. Adviser tenure, and team tenure, is also important as investment returns reported in an adviser's early years may no longer be relevant to the team currently in place. Aspects of people, or staff, typically considered include, but are not limited to:[47]

- Number of employees;
- Position description (e.g., portfolio managers, strategists, research analysts, economists, operational, compliance, marketing, management);
- The number and each type of employee; and
- Average years of professional experience.

2. Process

51. The extent to which investment performance can be repeated over time depends, at least in part, on whether a well-defined investment process is in place. It is important for investors to evaluate whether an investment adviser's process is indeed well-defined and whether they as investors understand it.[48] Key elements considered in the evaluation of the investment process include: investment management style; implementation of investment ideas; buy and sell disciplines; risk management (including hedging downside risk); investment research; team approach (e.g., committee, individual decision maker); technology; and infrastructure. Any changes to these elements over time are expected to

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[47] *See Russell's Group Philosophy*, Russell Investment Group (October 2006); *See also* Brian Tipple, *Avoiding the Pitfalls: Best Practices in Manager Research and Due Diligence* 46-47 (CFA Institute June 2010).

[48] G. Timothy Haight, Stephen O. Morell, & Glenn E. Ross, How to Select Investment Managers & Evaluate Performance 31 (Hoboken: John Wiley & Sons, Inc. 2007).

be identified through periodic monitoring activities.

52. In addition, investment advisers are evaluated to ensure their actions adhere to their stated investment philosophy or management style, their professional investment experience, market focus, and portfolio objectives over time and through various market cycles. For example, if an adviser were to suddenly or without warning change investment strategies (i.e., "style drift"), it could change the investor's risk profile.

3. Portfolio

53. Consistent, ongoing due diligence determines whether the approach described by the adviser actually reflects the reality of the portfolio constructed.[49] This feeds back into process, as an investor wants to be sure it is compensating an adviser for performance and adhering to the stated investment objective and strategy. In addition, transaction level (i.e. securities) due diligence includes, among other things, reviews and analyses of what has been bought and sold as well as understanding the risks of how trades are executed.

54. Performing reverse engineering is a customary component of due diligence for assessing portfolio risks and characteristics. The reverse engineering process includes modeling the strategy based on information known about the strategy, and provides an investor with information about the returns that could be expected from executing the strategy, how those returns may be correlated with market exposure, as well as information related to key risk measures associated with any strategy, such as volatility, or standard deviation.

4. Performance

55. In evaluating the performance of an investment adviser, whether initially or during ongoing due diligence, both qualitative and quantitative measures are considered, and all analyses must be consistent with the adviser's stated investment style. For example, in assessing performance it is customary to perform quantitative analysis to compare the

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[49] Brian Tipple, *Avoiding the Pitfalls: Best Practices in Manager Research and Due Diligence* 46-47 (CFA Institute June 2010).

returns of an investment adviser to comparable market indices and/or a peer group of advisers (i.e., "peer analysis").[50] Performance analysis is typically performed on a risk-adjusted or style-adjusted basis[51] so that the other investment options that have more risk associated with them can still be compared to the subject investment strategy.

5. Pricing

56. Finally, the fees charged by an investment adviser are key components of the investment management process. Fees for investment advisers typically consist of management fees and/or performance fees. It is both customary and essential that the compensation structure be created in a way so as to align the interests of the adviser and the investor.[52]

B. Information Gathering

57. Due diligence can be performed using information from a variety of sources. For example, investors will collect information from publicly-available sources including databases[53] and marketing materials. There are numerous firms that specialize in due diligence.[54]

58. Sterling's own hedge fund, Sterling Stamos, used Due Diligence Questionnaires ("DDQs")

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[50] This type of due diligence was specifically identified by Sterling's own hedge fund, Sterling Stamos. *See* Sterling Stamos Letter to Investors (October 5, 2005) (SSMSAC0000181-83).

[51] Many statistical techniques are used to identify investment advisers' sources of return. Risk-adjusted returns evaluate returns in light of the risks assumed, either by investing in more volatile securities or employing leverage. Style-based analyses incorporate the sectors or asset classes invested in as part of their analysis.

[52] As it relates to aligning interests, within the hedge fund and fund of funds industry, it is not just common, but expected, for advisers to have their "skin in the game." This is to insure an alignment of interests between the investor and the adviser not just in good times, but bad times as well. Since hedge funds typically have performance fees, which allow the advisers excess compensation commensurate with their positive performance, it is considered only fair and hence expected, that they be willing to suffer personal losses in the event that their investments decline. It would have been a significant red flag, therefore, if Madoff was not invested in his own strategy.

[53] For example, databases such as Bloomberg contain trading and market information, while BarclayHedge contains performance-related as well as operational-related information on hedge funds.

[54] There are dozens of firms that specialize in due diligence, including Aksia LLC and Albourne. These particular firms were consulted and determined well prior to December 11, 2008, that BLMIS was too good to be true. David Glovin, Karen Freifeld & David Voreacos, *Investment Adviser Aksia Warned Clients of Madoff 'Red Flags'*, Bloomberg (December 13, 2008), http://www.bloomberg.com/apps/news?pid=newsarchive&sid=afr_KQndJUUs; Matthew Goldstein, *The Madoff Case Could Reel in Former Investors*, Bloomberg Businessweek (December 31, 2008), http://www.businessweek.com/magazine/content/09_02/b4115025606347.htm.

to collect information.[55] and was familiar with the due diligence process having been on both sides of the investigation: both as one conducting due diligence and one who is the subject of due diligence. Sterling Stamos performed systematic due diligence on potential investments on behalf of investors, including Sterling, and its own capital. Sterling Stamos also responded to inquiries from potential investors in Sterling Stamos, and would reply to these investors with a completed DDQ.[56]

59. The documents listed in Appendix IV are documents that Sterling Stamos either received from another investment adviser as part of its due diligence, or documents Sterling Stamos completed itself in response to one of its prospective or current investors. Sterling Stamos's consistent, and thorough due diligence processes demonstrate their core competencies including conducting proper and industry custom due diligence. Repeated due diligence was performed by Sterling Stamos on various funds in different years, sometimes in connection with new investments into a fund.

VIII. OPINION NO. 1

THERE WERE NUMEROUS FACTS AND CIRCUMSTANCES RELATING TO STERLING'S BLMIS INVESTMENTS AND RELATIONSHIP THAT WERE RED FLAGS. BASED ON THESE RED FLAGS, INDUSTRY CUSTOMS AND PRACTICES WOULD HAVE BEEN TO CONDUCT FURTHER DUE DILIGENCE.

60. Based on my experience, my independent review of documents and testimony in the record to date, my own independent analysis, as well as customs and practices of the investment management industry, as I noted above, it is my opinion that numerous facts and circumstances relating to Sterling's BLMIS investments were red flags that: (i) Madoff was not engaged in the strategy he purported to follow and were by their nature indicia of

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[55] A due diligence questionnaire is a document that potential investors provide to investment advisers prior to investing. The questionnaire requests information regarding background, investment philosophy, historical performance, and other due diligence-related issues.

[56] *See, e.g.*, Sterling Stamos DDQ response to Redacted (October 2006) (SSMSAA0001487); Sterling Stamos DDQ response to Redacted (July 2007) (SSMSAA0001932).

fraud that required additional qualitative and quantitative due diligence; (ii) were rife with the opportunity for Madoff to commit fraud; and/or (iii) were virtual impossibilities where the only rational or reasonable explanation was fraud.

Red Flags

1. All paper statements / No electronic access (1985-2008)

61. A critical red flag associated with BLMIS's operations relates to the use of paper statements, and the lack of any electronic access by Sterling. Despite typical investment management industry operating procedures of allowing clients to obtain account statements, balances, and other details through the internet, Sterling was never provided real-time access to any account data or electronic statements.[57]

62. For decades, the common medium for communication between financial institutions and their clients was written notices (i.e., delivered via hard copy). Exactly when financial institutions on the whole made the switch to electronic correspondence is difficult to pinpoint. But records show that discount brokerages such as E-Trade, Fidelity, and Schwab had electronic platforms designed to give clients the ability to manage their accounts and receive electronic monthly statements as early as 1997.[58] Money managers such as T. Rowe Price had similar electronic platforms to monitor account activity available as early as January 1998.[59] By June of 2000, the practice of granting clients electronic access to their accounts would appear to be mainstreamed given the enacted legislation at the time.[60] Yet long after industry-comparable companies had begun

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[57] Friedman Dep. 557, June 24, 2010.

[58] *E-Trade* (April 1997), Internet Archive: WayBackMachine (last visited November 21, 2011), http://wayback.archive.org/web/*/http://www.etrade.com; *Fidelity (April 1997)*, Internet Archive: WayBackMachine (last visited November 8, 2011), http://wayback.archive.org/web/*/http://www.fidelity.com; *Schwab (April 1997)*, Internet Archive: WayBackMachine (last visited November 8, 2011), http://wayback.archive.org/web/*/http://www.schwab.com.

[59] *T. Rowe Price (January 1998)*, Internet Archive: WayBackMachine (last visited November 8, 2011), http://wayback.archive.org/web/*/http://www.troweprice.com (January 1998).

[60] On June 30, 2000, the Electronic Signatures in Global and National Commerce Act (referred to herein as the "E-Sign Act") was signed into law by Congress. 15 U.S.C. § 7001. The implementation of this law "[allowed for] the use of electronic records to satisfy any statute, regulation, or rule of law requiring that such information

allowing electronic access Sterling still did not have electronic access to any account data up until December 11, 2008.[61] Unlike consumers, who began performing increasing numbers of their own, individual banking transactions throughout the 2000s through online access to checking and savings accounts, BLMIS's operations continued to be paper-based, without any electronic access to statements.

63. From its inception through 2008, BLMIS sent all monthly statements and trading documentation to investors, including Sterling, in hard copy form, with time delays. For a firm that claimed to use "cutting-edge technology" in its operations and with such a small employee base to handle the enormous logistical task of mailing documentation to investors, it was a warning sign of fraud that paper documents continued to be Madoff's standard operating procedure for BLMIS instead of electronic documents.

64. Madoff was touted in the media as a leader in trading technology, in publications including *Securities Week*, *New York Times*, and *Wall Street & Technology*.[62] For example, in the

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be provided in writing, if the consumer has affirmatively consented to such use and has not withdrawn such consent." Another portion of the E-Sign Act focuses on required record retention. Specifically it requires "[a] financial institution to maintain electronic records accurately reflecting the information contained in applicable contracts, notices or disclosures and that they remain accessible to all persons who are legally entitled to access for the period required by law in a form that is capable of being accurately reproduced for later reference." Given that the law requires maintenance of electronic records, it would be reasonable for clients to be granted access to their own records electronically. Federal Deposit Insurance Corporation, "The Electronic Signatures in Global and National Commerce Act (E-Sign Act)," FDIC Compliance Manual, Sec. X-3.1-X-3.4 (June 2009).

Electronic account information had become so prevalent that the U.S. Office of the Comptroller issued an advisory letter in November 2004 to the chief executive officers of all national banks stressing the importance of having investor records retained within an online platform. The advisory letter states explicitly that "[f]ailure to provide such electronic disclosures in a proper manner can expose the bank to significant compliance, transaction, and reputation risk." Office of the Comptroller of the Currency, AL 2004-11, *Electronic Consumer Disclosures and Notices* (October 1, 2004), http://www.occ.gov/static/news-issuances/memos-advisory-letters/2004/advisory-letter-2004-11.pdf.

[61] In 2008 Sterling responded to a request from Bank of America for electronic access to BLMIS accounts in connection with Sterling's "double up" accounts, stating "[u]nfortunately, Madoff does not offer this service to their clients." Email from Cynthia Bernstein to Gibaldi Rosemarie (Bank of America) re: electronic access to monthly statements (March 11, 2008) (STESAO0003000).

[62] *NYSE Price Material Raises Eyebrows at Madoff*, Securities Week (McGraw Hill, Inc. September 3, 1990); *3 Firms Plan to Develop New System for Trading*, New York Times (June 8, 1999) (STESAP0000231); Anthony Guerra, *Family Influence*, Wall Street & Technology (July 07, 2000); *Madoff Seeks Edge with Pre-Opening Price Improvement Plan*, Securities Week (May 31, 1999); Susan Rodetis, *Third Market Man*, Equities

late 1990s. Madoff initiated the creation of PRIMEX, a company that would become a new stock trading system eventually adopted by the NASDAQ.

65. The lack of electronic statements provided was a strong red flag, particularly given the technological advances made on the broker-dealer side of Madoff's business. The delivery of paper statements on a time delay creates an opportunity for fraud as it allows for the backdating of transaction information--exactly what occurred here.[63]

2. The Fee Structure Is Extremely Rare (1985-2008)

66. Based on my experience, the atypical investment management operation run by Madoff and especially the fees he purportedly charged were a structural red flag. Though often compared to a hedge fund (and described by Sterling as a hedge fund manager),[64] BLMIS did not technically fit the model of a hedge fund, a mutual fund, or any other traditional investment advisory model.

67. Madoff chose to run his investment advisory operations through the use of what are called managed accounts, where each investor received their own account number, account statement, and related communications.

68. One of the primary benefits of a managed account is that it offers an investor a high degree of customization and transparency. That is, the investment adviser, or money manager, has the ability to customize an investment strategy for a particular investor. As a result, managed accounts typically have different strategies, each reflecting the risk profile of the investor. However, Madoff's purported investment strategy was not customized or unique

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(October 1993); Press Release, NASDAQ, SEC Grants Permanent Approval of NASDAQ's Primex Auction System (New York: March 3, 2003), http://www.nasdaq.com/newsroom/news/pr2003/ne_section03_015.html

63 As evidence that paper statements could be manipulated, Sterling's BLMIS account statements never reflected the underlying name change for the Fidelity money market fund. The Fidelity Spartan U.S. Money Market Fund (Ticker: FDLXX) officially changed its name to Fidelity U.S. Money Market Fund, effective August 15, 2005. Sources: Supplement to the Spartan U.S. Treasury Money Market Fund, Spartan U.S. Government Money Market Fund, and Spartan Money Market Fund June 29, 2005 Prospectus. *See also* Saul B. Katz Customer Statement, account number 1-KW024-3-0, July 31, 2006 (MDPTPP03832231).

64 Fred Wilpon Dep. 144: 9-10, July 20, 2010. *See also* Chachra Dep. 116, October 8, 2010 and Stamos Dep. 146, August 19, 2010.

to its individual investors. Madoff implemented the same split-strike conversion strategy across every account following that strategy – and every Sterling account but one followed this strategy.[65] It is highly inefficient for an investment adviser, following the same investment strategy for every investor, to implement the strategy using managed accounts instead of a commingled account (a collection of individual accounts administered as one account) or a fund structure. The inefficiencies at BLMIS were created in part due to the unusual number of small-sized accounts Madoff managed, as well as the large total number of accounts (thousands), making the execution more challenging. As a result, Madoff incurred significantly more administrative costs than would have been incurred had Madoff run his operations through a fund structure.

69. The fact that Madoff employed an operational structure that is significantly more costly than industry norms (costs borne by BLMIS and not clients) was a red flag and an indication of potentially suspicious activity. Further, while this administrative cost structure was dramatically higher than a traditional fund structure, the fees that Madoff purportedly collected were significantly lower, and an extreme departure from industry customs. An adviser like Madoff would be expected to receive both management and incentive fees.

70. Hedge funds (which Sterling likened Madoff to) typically charge two types of fees for managing a client's assets: management fees and performance fees.[66] These fees compensate the fund manager for managing the portfolio. They additionally compensate the fund manager for successful performance. Fees to pay broker-dealers for trading securities, as well as other expenses, are either charged for separately, or can be covered in management fees.

71. Madoff purportedly charged a transaction-based commission fee. This was the only fee

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[65] Sterling had one account that did not follow a split-strike conversion strategy (account number 1C1073). This account was active from January 1992 through July 1997 and purportedly followed a convertible arbitrage strategy. SQL Database: StorQM Customer Statements (2002-2008). I have not addressed convertible arbitrage in my report.

[66] John C. Hull, *Options, Futures, and Other Derivatives* 9 (Prentice Hall: New Jersey, 6th Edition 2006).

that was supposedly charged to investors.[67] While this transaction-based commission only structure is consistent with services provided for simple broker-dealers. Madoff was serving investors. including Sterling, as an investment adviser. not a broker-dealer. and this fee structure is simply not used by investment advisers. One reason. among others. is that it would lead to a conflict of interest. If an investment adviser is compensated based on the number of transactions. it creates an incentive for more frequent trading and without regard necessarily for maximizing investor returns (i.e.. "churning").

72. A common industry fee structure for the investment adviser is the "1-and-20" structure, which consists of a management fee of one percent (1%) of AUM and a performance fee of twenty percent (20%) of profits. This fee structure varies depending on a manager's experience and customer "demand" to "get in on" a particular fund.[68] Profits can consist of actual net profits for the period or profits in excess of a certain benchmark, such as the London Interbank Offer Rate ("LIBOR"). Madoff. however. charged no purported fees based on AUM or on performance. Instead. he merely charged a commission for executing trades. passing up many tens, if not hundreds. of millions of dollars in fees per year. Madoff's fee structure suggested, on its face. that Madoff was lying about what he was doing as he was theoretically leaving hundreds of millions of dollars on the table annually for no discernable or economically rational reason.

3. Impossible Transaction Prices Early on in Sterling's BLMIS Investments

a) Impossible Transaction Prices on Common Stock (mid to late 1980s)

73. During the mid to late 1980s. Arthur Friedman. one of the partners at Sterling. tracked the market prices on Sterling's customer statements from BLMIS, comparing the prices to the

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[67] This "fee" would have been charged to Sterling anyway as a standard transaction cost so Madoff charged nothing for his strategy/investment management services.

[68] Sterling Stamos, who ran a fund of funds. reportedly charged fees of 1-and-5 over 5. E.g., Sterling Stamos Security Fund. L.P. (February 2005) (SSMSAA0026027-57 at 54).

daily range.[69] A review of transactions from that time period suggests that an impossibly high percentage of equities were reportedly bought at the lowest possible price during the day, or sold at the highest possible price during the day.

74. Between 1985 and 1987, Sterling customer statements showed a total of 159 transactions. Of these 159 transactions, 147 were purported purchases of securities. In 60 out of the 147 equity purchases (over 40 percent), the security was reportedly bought exactly at the daily low price.[70]

75. In fact, one of the trades actually occurred *below* the lowest price of the day. The customer statement for one Sterling account showed that on October 10, 1985, BLMIS purportedly bought 16,000 shares of Advanced Micro Devices for $22 per share.[71] However, the lowest price on that day was $22.75 per share. It would be impossible for BLMIS to transact at that price because it was outside the possible range of transaction prices. This transaction was a clear indicia of fraud.

76. The remaining 12 equity transactions were purported sales of securities. Of these 12 transactions, four were reportedly sold exactly at the daily high price.[72] This means that BLMIS would have sold securities at the maximum possible price approximately 33 percent of the time.

77. For a strategy such as Madoff's, trades are executed during the day, and each investor is offered the average price of those trades. In order for the average price to be the lowest or highest price of the day, all of the shares purchased must be at the low or high of the day respectively. This level of "success" is virtually impossible, as share prices move around during the day, with very few shares actually trading at the extreme high or low of any

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[69] Arthur Friedman Dep. 124, June 22, 2010.

[70] For example, on December 19, 1986, BLMIS supposedly purchased 12,600 shares of Bristol Myers Co. across nine accounts. These trades were reported on the customer statements at $81 per share. According to Bloomberg market data, the daily low price on December 19, 1986 was $81, implying that BLMIS bought these shares at the low price of the day. See, for example, the December 1986 customer statement for account 1KW014 (1-01138-3-0) (December 31, 1986) (MF00067323).

[71] Account number 101994.

[72] My analysis does not assume that a $0.04 commission was included in the reported price.

given day. These transactions suggest an impossibly high percentage of equities were reportedly bought at the lowest possible price during the day, or sold at the highest possible price during the day, and as a result are indicia of fraud as well as a red flag that Madoff was not executing the strategy he purported to follow.

b) Impossible Transaction Prices on Options (mid to late 1980s)

78. In addition to equities trading at impossible prices, Sterling's BLMIS statements also showed option transactions at impossible prices. For example, in October 1987, Friedman noted that for a gain of $3,900, BLMIS sold 1,500 call option contracts with an $85 out-of-the-money strike price on Johnson & Johnson ("J&J") for $6,700 and purchased an $80 in-the-money put options for $2,800.[73] Given that J&J's stock was trading at $77.50 per share, these option prices could not have been achieved. These prices for the J&J options are completely inconsistent with the fundamental pricing models used to price basic options. If the price for the call options was accurate, then the price of the put options should have been approximately $11,800, costing significantly more, and resulting in a net loss of $5,100.[74] Put simply, the relationship between the puts and calls reported by BLMIS was impossible to achieve in the market. These inconsistent options transactions were red flags that Madoff was not transacting at the prices he said he was transacting because they would have been virtually impossible.[75] These option transactions were strong red flags and indicia of fraud because they were purportedly traded at impossible prices.

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[73] Arthur Friedman Handwritten Maximum Gain & Loss Analysis (1987) (STESAF0125369); Friedman Dep. 173-174, June 22, 2010.

[74] Price for put option estimated based on Black-Scholes Model.

[75] Sterling also tracked potential gains and losses in its BLMIS accounts, and compared these to actual gains and losses realized in its BLMIS accounts. This transaction was included in documents related to the tracking. Arthur Friedman Dep. 123-124, June 22, 2010; Arthur Friedman Handwritten Maximum Gain & Loss Analysis (1987) (STESAF0125369)

4. Sterling Learns That A Business Partner and Friend Buys Fraud Insurance That Covers Madoff, Including Ponzi Schemes (February 2001)

79. In February 2001, Saul Katz, one of the Sterling general partners, learned that his friend and business partner in Sterling American Properties, Chuck Klein had purchased fraud insurance on behalf of Klein's investment vehicle (American Securities) for Madoff accounts, which included coverage for Ponzi schemes.[76] The fact that Klein purchased fraud insurance that covered Madoff was a strong red flag on its face. In my 25 years of working in the investment management industry, conducting due diligence, speaking with investors, and advising on investment decisions, this is the only time I have ever seen an insurance policy available to cover fraud committed by an investment adviser. If the suspicions about an investment adviser rise to a level that necessitates complete financial protection from fraudulent activities perpetrated by the investment adviser, the implications are obvious – significant concerns exist that the investment adviser may be a fraud.

80. Investment adviser fraud protection insurance policies are atypical if not an extraordinary departure from industry customs and practices concerning investment advisers. Instead of investigating the target of the insurance (Madoff) by conducting or having conducted independent due diligence – which would have been consistent with both my experience with high net worth individuals and industry customs – Sterling apparently contacted an insurance broker in the June 2001 time frame in order to explore potentially hedging their bets, by procuring such a policy.[77]

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[76] Friedman Dep. 420-421, 431, June 24, 2010.

[77] Friedman talked to Robert Duran, a Frank Crystal insurance broker, and learned that the policy covered fraud, had a $500,000 deductible (as SIPC covers the first $500,000), cost 30 basis points per face amount ($0.30 for every $100.00), and the cost to insure $200 million would be $600,000. Friedman was subsequently informed in June 2001 that only $100 million could be covered. Interoffice Memo re: Madoff Insurance (February 26, 2001) (STESAA0021087); Interoffice Memo re: Madoff Insurance (June 13, 2001) (STESAP0000129 at 132). Ultimately, Sterling declined to purchase the insurance. Arthur Friedman Dep. 434, June 24, 2010.

5. MAR/Hedge and Barron's Articles (April 2001)

81. In the same time period that Sterling learned that a friend bought insurance to protect himself against Madoff stealing his money, copies of two articles were circulated to the Sterling partnership that questioned the legitimacy of Madoff's returns.[78] While media publications are routinely reviewed in the industry, and can create headline risk (i.e., the risk that a story will spread throughout various media publications, and negatively impact the investment adviser), news stories are not indicia of fraud in and of themselves. Nevertheless, when articles like these are published, industry customs and practices are that further due diligence be conducted.

82. The first article was published in May 2001 in *MAR/Hedge* titled "Madoff tops charts; skeptics ask how."[79] Highlights from the article include, but are not limited to, the following:

- Madoff is supposedly running one of the largest and most successful hedge funds in the world, based on historical returns;[80]

- The opinions of a dozen industry professionals indicate that the split-strike conversion strategy Madoff claimed to use would not produce the degree of returns Madoff allegedly attained in the early 1990s to 2001. A few reasons included: (1) the fact that Madoff's returns had little to no volatility compared to firms that implemented a similar trading strategy, (2) Madoff seemed to consistently be able to "time the market" perfectly, and (3) not one person or firm was able to duplicate his

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[78] Michael Ocrant, *Madoff tops charts; skeptics ask how*, MAR/Hedge (Issue No. 89, May 2001) (STESAP0000204-08); Erin Arvedlund, *Don't Ask, Don't Tell: Bernie Madoff is so secretive, he even asks his investors to keep mum*, Barron's (May 7, 2001) (STESAP0000203).

[79] Letter to F. Wilpon from Richard Papert, handwritten cc to all partners, attaching *MAR/Hedge* article (April 30, 2001) (STESAP0000204); *See* Michael Ocrant, *Madoff tops charts; skeptics ask how*, MAR/Hedge (Issue No. 89, May 2001) (STESAP0000204-08). While the article came out in the May edition of the magazine, it is likely the magazine was distributed to customers prior to May.

[80] Michael Ocrant, *Madoff tops charts; skeptics ask how*, MAR/Hedge (Issue No. 89, May 2001) (STESAP0000204-08). The article noted that although Madoff did not provide the amount of Assets Under Management (AUM) in his fund, he did not dispute that the AUM was around \$6 - \$7 billion as of 2001.

strategy (including Gateway, a mutual fund following a split-strike conversion strategy);[81] and

- A few of the contacted experts claimed Madoff must have been using financial instruments outside of the S&P 100—or something different than what investors, including Sterling, were being told. Madoff also explained his strong returns by citing a low-to-no fee structure, stating that BLMIS was "just happy" to make trading commissions.

83. Around the same time period Sterling's partners received another article covering similar red flags related to BLMIS, this one published in *Barron's*.[82] Highlights from the article include, but are not limited to:

- BLMIS had been averaging returns of 15 percent per year for more than a decade and never had a down year. When Madoff was asked how he accomplished such a feat, he stated "[i]t's a proprietary strategy. I can't go into it;"

- Certain industry professionals responded to BLMIS's remarkable returns by suggesting that Madoff's market-making operations may have been using market information to front-run trades, which would have been a fraudulent operation;

- Three options strategists at major banks could not understand Madoff's returns via the split-strike conversion strategy. A former Madoff investor is quoted as saying that any "seasoned hedge fund investor knows the split-strike strategy is not the whole story;" and

- Madoff's refusal to charge fees for his money management services or fees on money he managed in private accounts remained a mystery.

84. Typical industry customs and practices, upon reading these articles, would have been to

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[81] Michael Ocrant, *Madoff tops charts; skeptics ask how*, MAR/Hedge (Issue No. 89, May 2001) (STESAP0000204-08).

[82] Fax to Arthur Friedman from Bob Zimmerman, handwritten cc to all partners, attaching *Barron's* article (May 7, 2001) (STESAP0000203); Erin Arvedlund, *Don't Ask, Don't Tell: Bernie Madoff is so secretive, he even asks his investors to keep mum*, Barron's (May 7, 2001).

conduct due diligence into BLMIS and Madoff. A few months earlier in February (as noted above), Sterling's business partner and friend had purchased fraud insurance in order to protect against, among other things, Madoff stealing money; thus, the questions concerning how Madoff generated returns, possibly illegal front-running, were in my opinion red flags that required further due diligence. The fact that these articles suggested that Madoff might not have been executing the very strategy it purported to implement is precisely the type of red flag that in my experience should (and would) prompt more thorough due diligence.

6. Madoff's Purported Strategy Was Unscalable

85. One of the key pieces of information disclosed in the *MAR/Hedge* article was the fact that Madoff was managing upwards of $6-7 billion in assets.[83] This amount under management is not by itself a red flag. However, the fact that Madoff was operating a split-strike conversion strategy using the S&P 100, and was doing so with up to $7 billion in assets was a red flag because of the implications on the scalability of the strategy.[84]

86. Operating any strategy using the S&P 100 has certain associated limitations. First, the S&P 100 contains arguably the most efficiently-traded and tracked stocks in the world, limiting the possible gains to be had from any market inefficiencies. Second, a strategy limited to the S&P 100 is by design limited to only 100 stocks, and therefore limited to the

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[83] Michael Ocrant, *Madoff tops charts; skeptics ask how*, MAR/Hedge (Issue No. 89, May 2001) (STESAP0000204-08). The article noted that although Madoff did not provide the amount of AUM in his fund, he did not dispute that the AUM was around $6 - $7 billion as of 2001.

[84] Similar to the law of diminishing returns, scalability refers to the concept that as a fund increases its AUM, it becomes increasingly difficult for that fund to find investment opportunities of a scale proportional to the growing size of the fund. In particular, many trading strategies are only profitable using small amounts of capital, hence the returns those strategies generate as a percentage of the fund decrease as the fund grows larger. Press Release, Alternative Investment Management Association (AIMA), *AIMA Launches New Due Diligence Questionnaires* (London: April 12, 2007), http://www.aima.org/en/media_centre/press-releases.cfm/id/51A9EFBE-E15D-4CEC-83A; Vikas Agarwal, Naveen D. Daniel, Narayan Y. Naik, *Flows, Performance, and Managerial Incentives in Hedge Funds* (Glasgow: European Finance Association (EFA) 2003); Roger M. Edelen, Richard Evans, Gregory B. Kadlec, *Scale effects in mutual fund performance: The role of trading costs* (March 17, 2007), http://ssrn.com/abstract=951367; Harry M. Kat & Helder P. Palaro, *FundCreator-Based Evaluation of Hedge Fund Performance* (February 22, 2007), http://ssrn.com/abstract=964301.

total number of publicly-available shares for these 100 stocks, as well as options on that particular index.

87. A useful comparison for purposes of scalability is the Gateway fund, a $1.3 billion fund as of 2001 that actually implemented a split-strike conversion strategy, but did so with the S&P 500.[85] One of the reasons why Gateway uses the S&P 500 is to avail itself of more securities and more market value, allowing it to invest a larger asset base in the strategy.[86] This strategy tends not to be scalable, and Gateway gives itself as much of an advantage as possible by utilizing 500 stocks instead of 100 stocks, and the associated increase in available market value. This means that Gateway has significantly more opportunity to implement its strategy than if it relied on stocks in the S&P 100. This advantage is not limited to the stocks. The volume of options available on the S&P 500 is significantly more than the volume of options available on the S&P 100, again contributing to the ability of Gateway to scale the strategy. The following figure illustrates this point. The figure shows that the notional value of call options (i.e., the number of option shares outstanding times the value of the index at the time) is significantly greater for the S&P 500 than the S&P 100.

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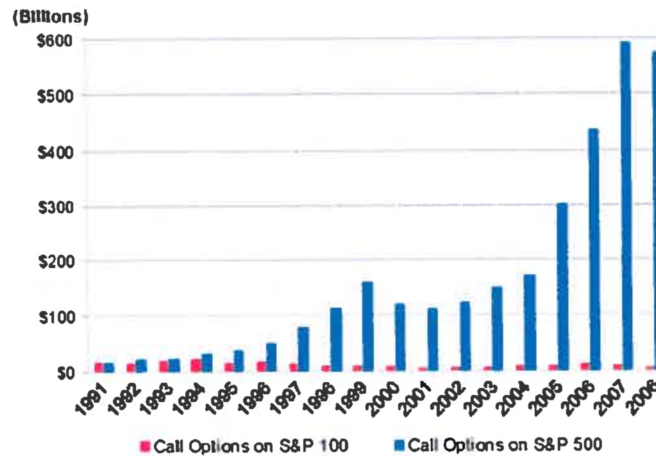
85 BarclayHedge Database (August 2011); Press Release, Natixis, *Natixis Global Asset Management, L.P. Acquires Gateway Investment Advisers, L.P.* (Boston: February 19, 2008).

86 Gateway's portfolio typically consists of 250 to 400 stocks, as compared to BLMIS's 35 to 50. Gateway Trust SEC Form N-1A (July 20, 2007).

Figure 1
Notional Value of Call Options 1991-2008: S&P 100 v. S&P 500[87]



88. A closer analysis of the outstanding notional value for S&P 100 call options reveals that it would have been impossible for Madoff to implement his SSC strategy. In order to implement the strategy, Madoff needed to sell call options, where the notional value of the call option would have corresponded to the funds invested in the market. That is, if Madoff bought $100 of stock, he needed to sell roughly $100 of notional value in call options. Therefore, if Madoff was managing an approximately $7 billion fund (as had been reported by 2001) he would need approximately $7 billion in call options in terms of notional value. However, as the following chart illustrates, by 2001, and every period thereafter there was simply not enough call option notional value to support Madoff's strategy.

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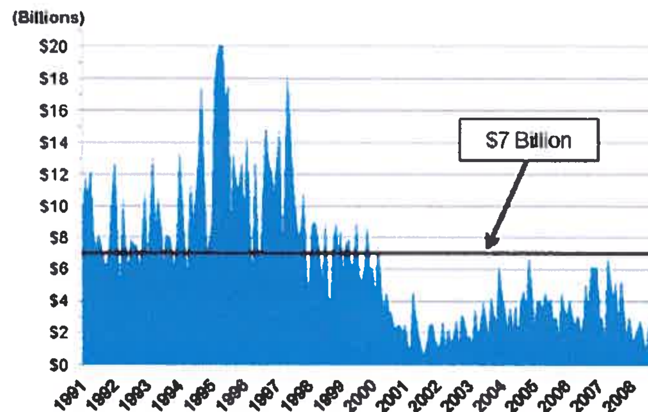
[87] Source for option data is Chicago Board Options Exchange ("CBOE").

Figure 2
Notional Value of S&P 100 Call Options[88]



89. That Madoff was operating an approximately $7 billion split-strike conversion strategy was a warning sign that should have prompted due diligence.[89] Madoff was operating with more assets and fewer stocks and fewer opportunities than a comparable strategy being implemented by Gateway, and due diligence would typically have been conducted in order to understand how, if at all, Madoff was able to do so and still generate consistently appreciable returns.[90]

7. Madoff Does Not Want Sterling's BLMIS Investments to be Disclosed if Sterling Stamos Files as an RIA (2002)

90. Typically, the relationship between an investor and investment adviser is one at arm's-

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[88] Madoff's strategy required selling call options that were out-of-the-money, therefore the chart depicts the monthly maximum notional value of call options that are out-of-the-money (and expiration date of less than six months). The maximum reflects the highest notional value reported on any day within the month. Data was obtained from CBOE.

[89] The issues associated with implementing a split-strike conversion strategy on the S&P 100 with a large asset base were further magnified in 2007 and 2008 when BLMIS publicly disclosed that it was managing $13 billion and $17 billion respectively. SEC Form ADV, Bernard L Madoff Investment Securities (January 24, 2007) (PUBLIC0003763-96 at 3771). SEC Form ADV, Bernard L. Madoff Investment Securities, January 7, 2008 (PUBLIC0003834-64 at 3840).

[90] Andre F. Perold and Robert S. Salomon, Jr., *The Right Amount of Assets Under Management*, Financial Analysts Journal (May-June 1991)

length, and limited to the services under contract. However, when Sterling Stamos considered registering as an RIA in 2002, Peter Stamos testified that Saul Katz informed him Madoff was concerned that Sterling Stamos registering would require disclosure of Sterling's investments with Madoff.[91] Peter Stamos also testified that, due to Madoff's concerns, Saul Katz was concerned that Sterling Stamos's registration would interfere with his relationship with Madoff.[92]

91. This response by Madoff, that registration might bring unwanted attention to BLMIS, was a significant red flag and should have prompted additional due diligence because there was no rational reason for Madoff to be so concerned about regulatory or other disclosure. In my experience, I have never known of any investment adviser requesting an investor take steps in order to avoid public disclosures of the manager, or the investor's relationship with that investment manager.

8. Sterling's Cumulative Returns are Over 48 Percent while the Market's Cumulative Returns are Down 27-44 Percent for a Three-Year Period

92. The end of 2002 saw the end of a three-year period during which the stock market fell dramatically while Sterling's BLMIS accounts showed returns of over 45 percent.[93] For example, documents in Sterling's possession show that it compared its BLMIS account returns against the Dow Jones Industrial Average ("DJIA")[94] in 1996 and then annually between 2000 and 2004, the results of which indicate that between 1999 and 2002 its

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[91] Stamos Dep. 49-53, August 19, 2010.

[92] Stamos Dep. 49-53, August 19, 2010.

[93] When performing comparisons of returns between and among funds and indices, it is standard industry practice to use full year or full month returns, regardless of whether a fund's assets are invested in the market, in treasuries, or in illiquid securities over the relevant time period. Investors are most interested in total returns, which would include periods "in the market" as well as "out of the market." While the fact that BLMIS was purportedly not "in the market" every trading day (i.e. was theoretically "parking" money in T-bills) is atypical for an investment manager, any comparison of returns between BLMIS and other funds or indices should not differentiate between when BLMIS was "in the market" versus "out of the market," as that is not the standard. For this report, I performed certain analyses pertaining to just those periods that Madoff was "in the market."

[94] The DJIA is an index of 30 large publicly-traded companies, and is one of a number of commonly-followed market indices. John Downes & Jordan E. Goodman, *Dictionary of Finance and Investment Terms* 402 (New York: Barron's 2nd ed. 1987).

BLMIS accounts had cumulative returns of 48.7 percent, while the DJIA fell 27.5 percent over the same time period.[95] Sterling's BLMIS returns and the DJIA returns went in precisely the opposite direction over a three-year period, creating a 76.2 percentage point variance (the difference between up 48.7 percentage points and down 27.5 percentage points). That is, if an investor held $100 in Sterling's BLMIS account in December 1999, that $100 would have become roughly $149 by December 2002 (an increase of 49 percent). Similarly, if an investor held $100 in the DJIA in December 1999, that $100 would have become roughly $73 by December 2002 (a decrease of 27 percent).

93. The following figures illustrate (as reported by Sterling) the annual declines in the DJIA of 6.2 percent, 7.1 percent, and 16.8, that, when compounded together, result in a three-year decline of roughly 27 percent.[96] This compares to the annual increases in Sterling's BLMIS accounts (as reported by Sterling) of 14.1 percent, 14.8 percent, and 13.5 percent, for a cumulative three-year increase of roughly 49 percent.[97]

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[95] Sterling kept a monthly Excel sheet tracking the balances in its BLMIS accounts. Arthur Friedman Dep. 336, 396, June 23, 2010. In spreadsheets containing account balances as of December 31, 2000, 2001, and 2002, Sterling also included entries listing Sterling's BLMIS annual returns followed by the DJIA annual returns. 1996 (STESAZ0001186); 2000 (STESAZ0000273); 2001 (STESAZ0000411); 2002 (STESAZ0000681); 2003 (STESAZ0000832); 2004 (STESAZ0001010); *See also* Spreadsheet titled "Madoff vs. DJIA Annual Percentage Change" (2005) (STESAJ0010051).

[96] $(1 - 0.062) * (1 - 0.071) * (1 - 0.168) - 1 = -0.275$.

[97] $(1 + 0.141) * (1 + 0.148) * (1 + 0.135) - 1 = 0.487$.

Figure 3
Cumulative Annual Returns (Indexed at December 31, 1999)
Sterling BLMIS Accounts v. DJIA

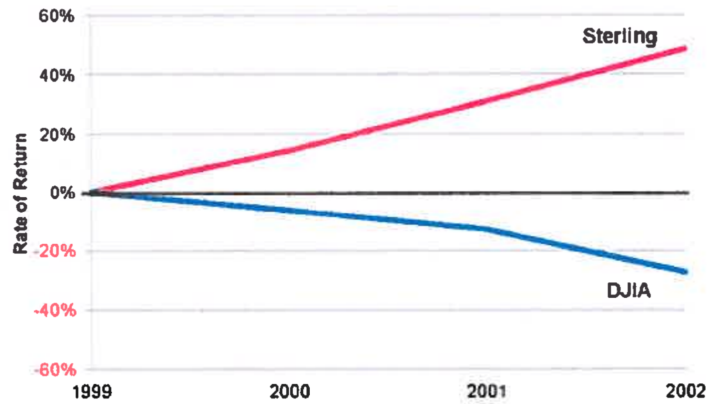
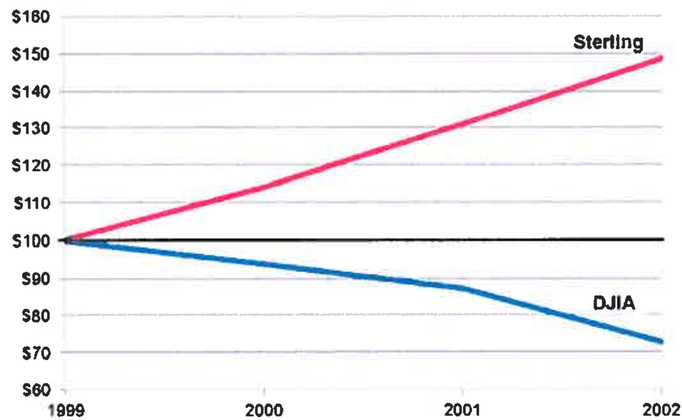


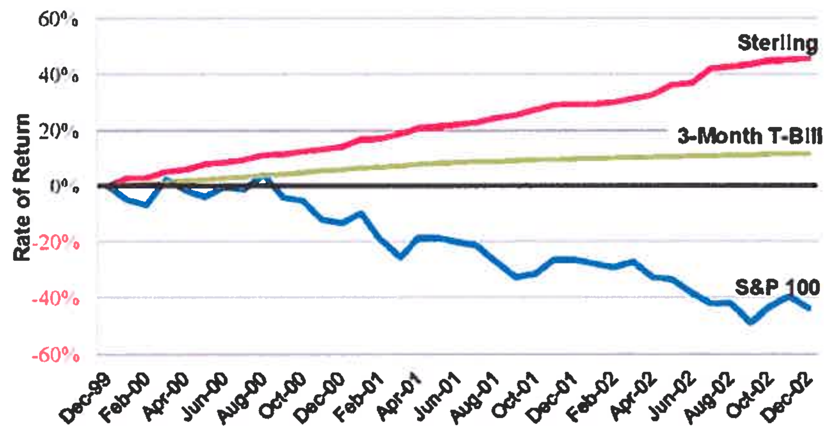
Figure 4
Cumulative Annual Returns (Indexed at December 31, 1999 = $100)
Sterling BLMIS Accounts v. DJIA as to the
Performance of a Theoretical $100 Investment



94. The difference in returns between Sterling's BLMIS accounts and the market is more pronounced when Sterling's BLMIS returns are compared against the underlying index in

Madoff's SSC strategy—the S&P 100. As the charts below show, the end of 2002 saw the end of a three-year period during which the S&P 100 fell by roughly 44 percent,[98] as compared to Sterling's BLMIS returns. The figures also include cumulative returns for Treasury Bills, a default risk-free investment.

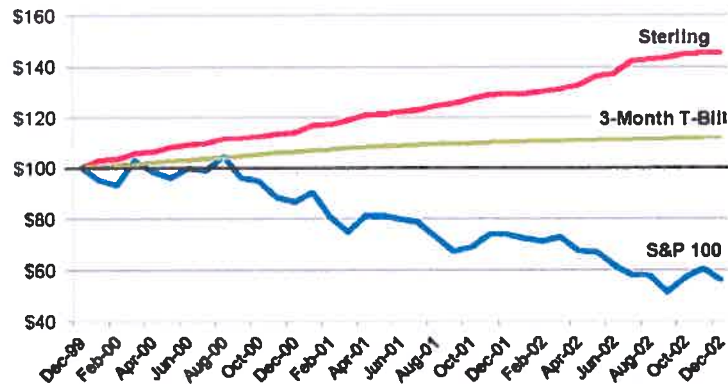
Figure 5
Cumulative Monthly Returns (Indexed at December 31, 1999)[99]
Sterling BLMIS Accounts v. S&P 100 and 3-Month Treasury Bill



[98] This analysis relies on monthly returns calculated from data available in the record. The cumulative return for Sterling's BLMIS accounts over the three-year period is 44 percent, which is less than the cumulative returns as calculated using documents in Sterling's possession (i.e., 49 percent). As such, the analysis based on monthly returns is conservative.

[99] Sources include StorQM Customer Statement, Settled Cash table (weighted average across Sterling accounts), Bloomberg market data, Federal Reserve FRB H.15 Release. Monthly returns for Sterling are calculated using the Modified Dietz method. The Modified Dietz method "[c]alculates a capital-weighted rate of return by taking the exact length of time that cash flow is present in the portfolio. The major advantage of this method is that it does not require daily calculation of the portfolio value." Noel Amenc and Veronique LeSourd, *Performance Analysis* 40-41 (est Sussex, England: Wiley, 2003).

Figure 6
Cumulative Monthly Returns (Indexed at December 31, 1999 = $100)[100]
Sterling BLMIS Accounts v. S&P 100 and 3-Month Treasury Bill as to the Performance of a Theoretical $100 Investment



95. This consistent, inexplicable over-performance with respect to the DJIA, the S&P 100 and Treasury Bills, over a three-year period, where global economic markets were down substantially, was a serious indicia of fraud that Madoff could not and simply was not doing what he claimed to be doing.

96. Sterling received documents stating that the SSC strategy would not perform well in a down market.[101] Madoff's SSC strategy is exposed to market movements within the strike range,[102] and in such a long, protracted downward move of the market, it would be statistically improbable to achieve this result.[103]

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[100] Sources include StorQM Customer Statement, Settled Cash table, Bloomberg market data, Federal Reserve FRB H.15 Release.

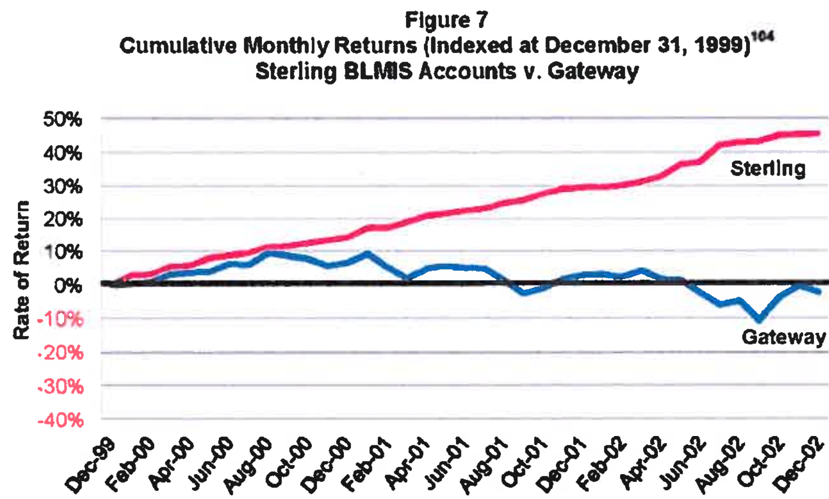
[101] *See, e.g.*, Gonder Memorandum (August 24, 1990) (STESAH0007078 at 80); Friedman Dep. 132, June 22, 2010. Madoff's ability to generate positive returns in periods of market stress was not limited to this time period. As addressed in Section IX.D.3, Madoff outperformed the S&P 100 during a number of periods of significant market stress.

[102] The strike range includes index prices above the strike price on the put option and below the strike price on the call option. Within this range, the options have no impact on investment performance, and the portfolio will move in tandem with the underlying index.

[103] As an example, I performed a linear regression of simulated SSC returns on the S&P 100 from 1990 to 2000. The beta of this regression, or the investments' dependence on market movement, is calculated to be 30%. This

97. If the market experiences prolonged movement in either direction, it should have been reflected in the returns of Sterling's BLMIS accounts. The expected performance of Madoff's strategy in the face of a 27-44 percent drop in market values can be observed through Gateway, a mutual fund that employed a SSC strategy similar in nature to Madoff's SSC strategy. As the following figures illustrate, Gateway's performance over this time period was nowhere near the performance reflected in Sterling's statements and, in fact, was negative:

Figure 7
Cumulative Monthly Returns (Indexed at December 31, 1999)[104]
Sterling BLMIS Accounts v. Gateway



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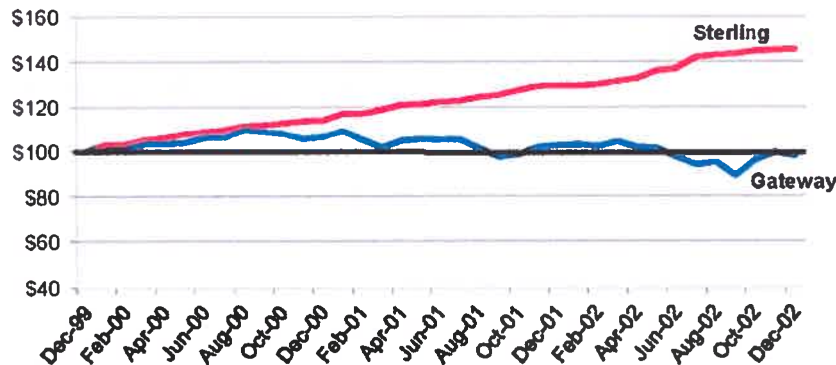
means that subject to error, and manager ability, the strategy is expected to be down 30% as much as the market's decline. The standard error of the regression is too small to allow for such a radical divergence as the stated results.

104 Sources include StorQM Customer Statements, Settled Cash table, and Morningstar Direct Database.

Figure 8
Cumulative Monthly Returns (Indexed at December 31, 1999 = $100)[105]
Sterling BLMIS Accounts v. Gateway Based on a Theoretical $100 Investment



98. As compared to the analyses above, where the S&P explained less than 5 percent of the change in Sterling's BLMIS returns, the S&P 100 explained 83 percent of the change in Gateway's returns, and the S&P 500 explained 84 percent of the change in Gateway's returns. This result is expected, as Gateway's SSC strategy was based on using stocks in the S&P 500 index, and therefore should be more strongly correlated to the return of the S&P 500.

99. Sterling's BLMIS return over this three-year period is also a major red flag because of its obvious and stark lack of correlation with the S&P 100. In a strategy that was expected to be correlated to the S&P 100, results like these are indicia of fraud and warning signs that Madoff was lying to investors about the strategy he claimed to be following. Industry customs and practices would be, at a minimum, to perform significant additional due diligence to understand or try to confirm how Madoff was possibly able to generate these returns, especially when the returns departed so significantly from the realm of expectation for Madoff's purported SSC strategy.

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[105] Sources include StorQM Customer Statements, Settled Cash table, and Morningstar Direct Database.

9. Sterling Was Cautioned by a Consultant that he "Couldn't Make Bernie's Math Work" and that "Something Wasn't Right" (2003)

100. Tim Dick, a venture capital investor, entrepreneur, and consultant to Sterling, reportedly told Saul Katz that he "could not make Madoff's math work" and that "something wasn't right."[106] Hearing that "something wasn't right," especially in light of the many other red flags preceding this discussion, was another red flag that Madoff was not doing what he purported to be doing. Basic due diligence practices would have been to further analyze and investigate "the math," to test the specific steps Dick undertook to try and make Madoff's math work, and to fully understand and evaluate the implications of what it specifically meant for the math to "not work."

10. Inconsistent Explanations About the Strategy's Implementation and Execution (January 2004)

101. A tell-tale red flag that an investment adviser is a fraud is when the adviser gives shifting descriptions of the strategy, and what drives its performance. In a memorandum dated January 6, 2004, Sterling's Arthur Friedman documented a conversation he had with BLMIS's Frank DiPascali regarding Madoff's 2003 returns.[107] In this conversation, Friedman asked DiPascali about a prior comment made by DiPascali regarding the existence of a "committee" at BLMIS responsible for investment decisions. Several minutes after this memorialized conversation with DiPascali, Friedman received a call directly from Madoff during which Madoff confirmed the existence of such a committee. Madoff further stated that he was the head of the "committee," DiPascali was a senior

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[106] Email from Tim Dick to Peter Stamos re: Madoff (December 13, 2008) (SSMSAA1010527); *See also Startup Capital Ventures – General Partners*, Startup Capital Ventures (last visited November 2, 2011), http://www.startupcv.com/ourteam/gen_partners.html#tdick; Stamos Dep. 246, August 19, 2010. Peter Stamos testified that this conversation occurred in late 2002/early 2003. Stamos Dep. 314, August 19, 2010.

[107] Friedman Memorandum re: Madoff (January 6, 2004) (STESAA0021058). The memo mentions that BLMIS was not invested in the market in December, when the market had been up 4 percent. In fact, Sterling's accounts were never invested in the market at the end of any calendar quarter beginning in the third quarter of 2002, which is highly suspicious. An opportunistic strategy such as Madoff's purported strategy cannot afford to intentionally be uninvested for artificial reasons without seriously compromising the chance to maximize returns. SQL Database: StorQM Customer Statements; Gonder Memorandum (August 24, 1990) (STESAH0007078-80).

member, and that all final decisions were made by Madoff himself.[108] Madoff also informed Friedman during this conversation that there were "4 or 5 black box technologies that deal with various aspects of [the] investment operations."[109]

102. This conversation with Madoff demonstrated the continued inconsistencies in strategy implementation with which Sterling was presented by Madoff over the years.[110] First, there was the issue of an investment committee. Immediately upon learning about an investment committee, industry customs and practices would be to perform due diligence related to this committee. While the existence of an investment committee is not, standing alone, a red flag—to the extent that such a committee had not previously been disclosed, it would be a red flag. Understanding the investment decision process is essential, and an investor would expect to learn of something as fundamental as an investment committee early on in the relationship with the investment adviser. The fact that a committee was being disclosed should have, in my opinion, prompted additional due diligence.

103. Second, there was the issue of "black boxes" purportedly being used by Madoff. Throughout Sterling's investment history with Madoff, they were told varying "stories" regarding the existence of black boxes. As early as 1990, Madoff's strategy purportedly relied in part on computer models and algorithms (i.e., a black box) to determine the stocks to pick for the strategy.[111] Subsequently in 2000, Sterling received BLMIS marketing materials from Fleet Bank, stating that "there [was] no black box."[112] Then, as recounted by Friedman in 2004, Sterling learned that there were 4 to 5 black boxes being used in the

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[108] Friedman Memorandum re: Madoff (January 6, 2004) (STESAA0021058).

[109] Friedman Memorandum re: Madoff (January 6, 2004) (STESAA0021058).

[110] Based on my review of the record in this case to date, it would appear to me that this was the first time in Sterling's investment history where an investment committee was discussed. This would not have been the first time Madoff offered new information about BLMIS contradicting prior information. When Sterling Stamos was created, Sterling approached Madoff about Sterling Stamos potentially investing with BLMIS. At that time Madoff indicated that he did not accept investments from funds of funds. However, Stamos testified that Stamos subsequently was told that at least two feeder funds were invested with Madoff. Stamos Dep. 197-198, August 19, 2010.

[111] Gonder Memorandum (August 24, 1990) (STESAH0007078-80).

[112] Fax to Arthur Friedman from Fleet Bank (October 30, 2000) (STESAP0000215-23).

strategy.[113] Whether an investment strategy uses or does not use a black box is fundamental to understanding the strategy itself as well as the risk profile of the strategy.

104. Receiving conflicting and shifting explanations about how an investment strategy is implemented is a warning sign that an investment adviser, such as Madoff, is lying about what he is doing. This inconsistency in the descriptions of use or non-use of black boxes is a major red flag or indicia of fraud that required additional due diligence to identify, among other things, how, in fact, black boxes were being used in the investment management process.

11. Comparison of Sterling's BLMIS Returns to Benchmarks (April 2004)

105. Sterling's Saul Katz testified that he was told by Madoff that his investment strategy targeted a return of 2 to 2.5 times the rate of return on Treasuries.[114] This statement or "target" was by itself a red flag that Madoff was not executing the strategy he claimed to implement. A SSC strategy should not be correlated to a bond yield, and more specifically it is highly unrealistic, and uncommon by any custom or practice in the investment management industry, to target a multiple of a bond yield.

106. In April 2004, documents in Sterling's possession indicate that research was performed comparing Madoff's historical returns with several market benchmarks, namely the Prime Rate, 30-day LIBOR, and the 10-Year Note, to test Madoff's claim that there was a relationship between interest rates and Madoff returns.[115] While an equity-based strategy (such as the SSC strategy) should not have a strong correlation to bond yields, the R-Squared for the reported returns from Madoff's strategy and the 10-year bond yield from 1991 to 2008 was 0.61, indicating that there was a strong relationship between Madoff and

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[113] Memo from Arthur Friedman to Sterling Files (January 6, 2004) (STESAP0000128).

[114] Saul Katz Dep. 61: 4-18, August 4, 2010.

[115] Friedman Dep. 191, 192, June 22, 2010; Friedman Dep. Ex. AF-6 (STESAP0000178); Spreadsheet titled "Madoff vs. DJIA Annual Percentage Change" (2005) (STESAJ0010051).

selected bond yields.[116] An R-Squared of 0.61 means that changes in the 10-year bond yield explain 61 percent of the change in Madoff's returns.[117] By comparison, the 10-year bond only explains 19 percent of the change in the S&P 100, 22 percent of the change in the DJIA, and 14 percent of the change in the BarclayHedge Bond Index over the same period.

12. Madoff "Loans" Sterling $54 million and the Transaction is Falsely Documented (May 2004)

107. In May 2004, Sterling was engaged in a deal with Cablevision to acquire the local media television rights of the Mets. As part of this deal Sterling had applied for two bank loans totaling $54 million, which had yet to be received as the closing date of the Cablevision deal approached.[118] As such, Sterling approached Madoff about withdrawing this amount from its BLMIS accounts.[119] Madoff informed Sterling that since the money in its accounts was "in the market," withdrawal would lower the accounts' returns.[120] The proposal was for Madoff to loan the $54 million to Sterling, which Madoff funded using a BLMIS bank account at Bear Stearns.[121]

108. First, Madoff's response to loan Sterling the $54 million interest free instead was, standing alone, a red flag because it is an extreme departure from industry customs and practices, and at a minimum highly unusual for an investment adviser to give money out of his own

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[116] Calculated based on information in Exhibit AF-38 to Arthur Friedman Deposition and Federal Reserve FRB: H.15 Release. *See* Arthur Friedman Dep. Ex. AF-38 (February 11, 2008) (STESAK0003504); Federal Reserve FRB: H.15 Release.

[117] R-Squared measures the percentage of a dependent variable's value that is explained by the independent variables in a linear regression. The R-squared is a number between 0.0 and 1.0. The higher the value, the greater the explanatory power of the independent variables. *Quantitative Methods for Investment Methods* 388-89, Association for Investment Management and Research (Baltimore: United Book Press, Inc., 2001).

[118] Saul Katz Dep. 197-198, August 4, 2010.

[119] Saul Katz Dep. 198-199, August 4, 2010.

[120] Fred Wilpon Dep. 214-215, July 20, 2010.

[121] Saul Katz Dep. 198-199, August 4, 2010. While Saul Katz testified that it was "Bernie's money," the money appears to have come from a BLMIS bank account at Bear Stearns. Bernard L. Madoff Investment Securities, Statement Period May 1, 2004 through May 28, 2004, Bear Stearns Services Corp. (May 28, 2004) (BSTSAC0000193-99 at 97); Fax from Arthur Friedman to Bernard Madoff (May 25, 2004) (STESAH0000076-77).

account instead of honoring the request that investors simply redeem their own money. In all my years working with investment advisers I have never seen, nor heard, until now, of an investment adviser who gave tens of millions of dollars to an investor in lieu of having them partially redeem their own account.

109. Second, Sterling testified that Madoff told it that taking money out of the market would lower the returns. This was a red flag. There is no such thing as a guarantee when investing with some market exposure (which Madoff purportedly had). To suggest otherwise was a clear warning sign that Madoff was acting in a suspicious manner.

110. Third, while originally Madoff was to "loan" the $54 million to Sterling, the paperwork associated with the transaction was unreasonably minimal and not accurately representative of what actually occurred. Instead of a loan, the single page of documentation for this transaction reflected a fictitious "investment" by Ruth Madoff and not Bernard Madoff:

> Dear Ruth: This will confirm the conversations with respect to an investment by you in the Network....You are simultaneously wiring to Sterling Equities Associates the sum of $54 million which is expected to be the approximate amount of your proposed investment in the Network.[122]

111. In short, everything associated with how Madoff responded to Sterling's redemption request and the subsequent "transaction" was a red flag of fraud and an extreme departure from industry customs and practices.

13. Why Sterling Stamos Withdraws from Bayou—A Ponzi Scheme (February – March 2005)

112. In February of 2005, Sterling Stamos redeemed the entirety of its investment in Bayou

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[122] Letter to Ruth Madoff from Fred Wilpon and Saul Katz re: Mets Network Company "Network" (May 25, 2004) (MADTEE00645190).

only a few months prior to the exposure of Bayou as a Ponzi scheme later in the year.[123] In my experience, and consistent with typical industry due diligence practices, the revelation of any investment-related fraud, especially a Ponzi scheme, triggers intensified due diligence, including the following: (1) investors check all of their investments to determine any exposure to the specific fraud that was revealed; and (2) investors typically review their entire investment portfolio to determine whether any of their investments exhibit similar characteristics to the recently revealed fraud.[124]

113. Sterling Stamos identified a number of characteristics, or reasons, why it redeemed its Bayou investment, it communicated these reasons to Sterling, and a number of these reasons were red flags to Sterling because of their similarity to BLMIS.[125]

114. Sterling Stamos outlined the following reasons for its divestment in Bayou:

- Style Drift: Bayou intended to incorporate a different strategy that included trading commodity futures into its existing style of trading equities, equity indices, and derivatives. Sterling Stamos cited two primary reasons this was problematic. The first was that Bayou's partners had little to no experience with the commodity futures markets, and the second was that commodity futures are characterized by high volatility, which would increase the overall volatility of the fund;[126]

- AUM Growth: Bayou wanted to double its fund size from approximately $500 million to $1 billion, part of which was to accommodate the trading of financial assets (commodity futures) with which Bayou had no experience;[127]

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[123] *CFTC v. Bayou Management*, No. 05-CV-8374, Complaint for Injunctive and Other Equitable Relief 9-10, ECF No. 1 (S.D.N.Y. September 29, 2005).

[124] Sterling was a limited partner in the Sterling Stamos fund that was invested in Bayou. Saul Katz Dep. 182-183, August 4, 2010.

[125] Sterling Stamos Redemption Memorandum (February 11, 2005) (SSMSAC0000149-50); Sterling Stamos Redemption Memorandum (March 01, 2005) (SSMSAC0000167); Chachra Dep. 175-178, October 8, 2010; Peter Stamos Dep. 188-189, August 19, 2010. The reasons Sterling Stamos redeemed its Bayou investments were reported at a biweekly Sterling Partner Meeting. Arthur Friedman Dep. 577, June 24, 2010.

[126] Sterling Stamos Redemption Memorandum (February 11, 2005) (SSMSAC0000149-50); Sterling Stamos – Conversations with Limited Partners Bayou Management LLC (2005) (SSMSAC0001139-49).

[127] Sterling Stamos Redemption Memorandum (February 11, 2005) (SSMSAC0000149-50); Sterling Stamos – Conversations with Limited Partners Bayou Management LLC (2005) (SSMSAC0001139-49).

- Operations: Bayou did not have an offering memorandum, used non-standard legal documentation, and had multiple errors on their K-1's for the fiscal year 2003. All of these observations raised concerns regarding back-office competency;[128]

- Lawsuits: Bayou was subject to several lawsuits from former employees and lost one trader whose departure, according to Sterling Stamos, was never fully explained. Sterling Stamos stated that these were "unsettling and although they have been resolved, they make us question...hiring practices to start;"[129] and

- Issues with an independent auditor:[130] Bayou represented that its financial transactions were certified by an independent public accounting firm called Richmond Fairfield ("Richmond").[131] In reality, Richmond was not independent, and was created by Israel and Marino for the sole purpose of concealing the ongoing fraud. As part of perpetuating this fraud, the annual reports were fabricated, and office space was leased for the purposes of acquiring a mailing address and telephone number.[132]

115. After Bayou was revealed as a Ponzi scheme in September 2005,[133] an additional red flag was identified: Bayou's use of an internal broker-dealer. The majority of trading activity at Bayou was transacted through Bayou Securities, a broker-dealer owned by Bayou.[134]

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128 Sterling Stamos Redemption Memorandum (February 11, 2005) (SSMSAC0000149-50); Sterling Stamos – Conversations with Limited Partners Bayou Management LLC (2005) (SSMSAC0001139).

129 Sterling Stamos Redemption Memorandum (February 11, 2005) (SSMSAC0000149-50); Sterling Stamos – Conversations with Limited Partners Bayou Management LLC (2005) (SSMSAC0001139).

130 Sterling Stamos Redemption Memorandum (March 01, 2005) (SSMSAC0000167).

131 *In re Bayou Group LLC*, No. 06-22306, Complaint 6, ECF No. 1 (Bankr. S.D.N.Y. September 1, 2006).

132 *In re Bayou Group LLC*, No. 06-22306, Complaint 6, ECF No. 1 (Bankr. S.D.N.Y. September 1, 2006). Stamos stated that Sterling Stamos included more extensive research into a fund's auditing firm in its updated due diligence checklist. When asked what auditor verification procedures were specifically added, Stamos stated, "we would either know the manager - know the audit firm, or if we didn't know the audit firm, we would do a site visit to get to know the audit firm." Stamos Dep. 188: 15-18, August 19, 2010.

133 Press Release 5121-05, Commodity Futures Trading Commission, *Commodity Futures Trading Commission, Hedge Fund Operator Bayou Management, Its Employees Samuel Israel III and Daniel E Marino, and Accounting Firm Richmond Fairfield Associates, Are Charged with Misappropriation and Fraud in an Action Brought by U.S. Commodity Futures Trading Commission* (Washington, D.C.: September 29, 2005), http://www.cftc.gov/opa/enf05/opa5121-05.htm.

134 *CFTC v. Bayou Management*, No. 05-CV-8374, Complaint for Injunctive and Other Equitable Relief 9-10, ECF No. 1 (S.D.N.Y. September 29, 2005).

116. BLMIS's operations exhibited certain of these red flags. First, one of the red flags identified by Stamos in Sterling Stamos's own documentation was Bayou wanting to double the AUM, and in particular whether Bayou Management could continue to effectively execute its strategies while growing the amount of capital so substantially. Over the same time period as Stamos's investment in Bayou, Sterling's accounts at BLMIS increased by a factor of approximately 3.5 times. Growth in this amount was a red flag as to whether Madoff could in fact continue to successfully or effectively implement the same strategy because: (i) in general, an increase in assets dilutes the opportunity to exploit market inefficiencies in any strategy (i.e. he would not be able to achieve the same level of returns); and (ii) a SSC strategy would naturally be capacity bound: i.e. there would be insufficient volume - especially in options markets (whether Over-The-Counter ("OTC") or exchange-traded) - to continue to both operate efficiently and deliver consistent returns.[135]

117. Second, as a multi-billion dollar investment adviser executing a consistent investment strategy across all investors, it would have been industry custom for Madoff to maintain some type of marketing documentation providing detailed information regarding his strategy, risks associated with the strategy, background on himself, and a detailed explanation of his fee structure.[136] Hedge funds[137] typically convey such information to

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[135] At this point, BLMIS is reportedly managing billions of assets and the growth would not only be in Sterling's assets. Letter to Fred Wilpon from Richard Papert attaching *MAR/Hedge* article (April 30, 2001) (STESAP0000204).

[136] Government Accountability Office, *Hedge Funds: Regulators and Market Participants are Taking Steps to Strengthen Market Discipline, but Continued Attention is Needed* 27, Report to Congressional Requesters (January 2008). Mutual Funds also prepare prospectuses for potential investors with information similar to a hedge fund Private Placement Memorandum. Mutual fund prospectuses include information on investment strategy, fee structure, past performance, and the investment manager in charge of the fund.

[137] Douglas Hammer, *U.S. Regulation of Hedge Funds* (American Bar Association 2005). Sterling's Fred Wilpon stated that Madoff was "one of the top hedge fund investors in the world." Fred Wilpon Dep. 144: 9-10, July 20, 2010; *See also* Chachra Dep. 116, October 8, 2010 and Peter Stamos Dep. 146, August 19, 2010.

investors through a Private Placement Memorandum.[138] which is a standard hedge fund marketing document.

118. Third, Madoff purportedly executed his own transactions. Finally, as basic, even minimal, due diligence would have uncovered, BLMIS's unknown auditor only had one active accountant who was incapable of auditing Madoff's operations given its AUM and investor base (*see* Section IX.B.5).

Figure 9
Red Flag Similarities Between Bayou and BLMIS

Red Flags	Bayou	BLMIS
Accelerated AUM Growth	✓	✓
Lack of Marketing Materials	✓	✓
Lack of Independent/Capable Auditor	✓	✓
Use of Internal Broker-Dealer	✓	✓

119. These similarities between Bayou and BLMIS were all red flags that additional due diligence was not only appropriate to undertake on BLMIS but was what industry customs and practices would have expected. These similarities between Bayou and BLMIS were indicia of fraud at BLMIS.

14. Sterling Was Offered A Short-Term "Special Investment" Opportunity (November 2005)

120. Not long after the Bayou Ponzi scheme was revealed (in November of 2005), Madoff offered Sterling a short term "Special Investment" opportunity, which required new capital into a new Sterling account, and was expected to generate returns substantially greater than Madoff had been reporting in Sterling's other BLMIS accounts.[139] Sterling's Fred Wilpon

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[138] Investment advisers to managed accounts would have marketing documents (for example, sample investment guidelines, PowerPoint presentations) available for prospective investors, and for periodic presentations.

[139] Interoffice Memo from AF to All Partners re: Special Investment in Madoff (November 28, 2005) (STESAP0000129); Arthur Friedman Dep. 434, July 24, 2010.

testified that his understanding of the opportunity was the following:

> "That Bernie had an idea, which would divert from his normal procedure, and that the returns might be better. It was a short-term kind of thing. It wasn't a long-term strategy. It was a short-term window of opportunity or strategy. I have no idea what the strategy was. And that would we want to invest. And I think we did."[140]

121. This "special investment" opportunity, at this moment in time, was in my opinion, a significant warning sign of fraud.

122. First, the requirement that this "opportunity" mandated new money and could not be transferred from other accounts was a warning sign of a possible liquidity crisis. It is industry practice to perform due diligence in order to understand any new investment opportunity from an adviser, especially one that requires new money.[141]

123. Second, this investment opportunity is atypical due to, among other things, the suggestion of dramatic, short-term increases in returns, and is indicia of possible fraud. Coming on the heels of the Bayou fraud, at a bare minimum, industry customs and practices would have been to conduct substantial additional due diligence of everything associated with this special opportunity (particularly because Sterling had "no idea what the strategy was").[142]

15. Stamos Tells Sterling That Madoff Being His Own Broker-Dealer Was a Prohibitive Operational Due Diligence Concern

124. Sterling was told by Peter Stamos, its financial partner, that Sterling Stamos would not invest with Madoff, and that BLMIS "would have been stopped at the door" based on, among other things, the fact that BLMIS was its own broker-dealer, and was therefore self clearing trades made in Sterling's BLMIS accounts.[143] Stamos testified about two issues

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[140] Fred Wilpon Dep. 230, July 20, 2010.

[141] The "special investment" was assigned account number 1KW427 by BLMIS. Here Sterling did exactly the opposite—they invested in the "special opportunity" and did not perform any due diligence related to it. Fred Wilpon Dep. 230, July 20, 2010.

[142] *See, e.g.*, Fred Wilpon Dep. 230, July 20, 2010.

[143] Peter Stamos Dep. 158-160, August 19, 2010.

associated with self clearing: (1) it was not best practices, and (2) Madoff could use information gained from broker-dealer activities to engage in front-running, which is fraudulent behavior.[144]

125. The fact that Madoff was supposedly his own broker-dealer is a strong red flag because it is well understood in the industry that this very structure presents an opportunity for fraud to be committed. Most funds do not serve as their own prime broker. Despite BLMIS having its own brokerage firm, not having a third-party prime broker raises a concern because the lack of third-party controls creates an opportunity for fraud.

16. Merrill Lynch Stated That It Would Not Invest With Madoff (2007)

126. Around June 2007, Merrill Lynch acquired a 50 percent interest in Sterling's hedge fund, Sterling Stamos.[145] In that same time frame Merrill's Kevin Dunleavy expressed concerns it had with BLMIS to Sterling's Saul Katz and Peter Stamos.[146] These concerns included: (1) the fact that BLMIS cleared its own trades through an affiliated broker-dealer, and (2) the possibility that BLMIS was engaged in front-running.[147] Merrill Lynch informed Sterling that BLMIS would not meet Merrill Lynch's due diligence requirements.[148] As a result, Merrill Lynch refused to take part in investments into BLMIS.[149]

127. Hearing these concerns from a top 5 investment bank, and learning that Merrill Lynch would not invest with Madoff because of due diligence concerns was a significant red flag. This should have prompted Sterling to perform its own due diligence to confirm or deny the warnings and suspicions that Merrill Lynch had communicated. When a well-regarded

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[144] Peter Stamos Dep. 159-160, August 19, 2010. According to Sterling Stamos's own documents, Sterling Stamos had recommended for years that Sterling redeem from Madoff. E-mail from Ashok Chachra to Janice Yu, re: Madoff (December 16, 2008) (SSMSAA1061678); E-mail from Mark Thompson to Ashok Chachra, re Madoff (December 16, 2008) (SSMSAA0934925); E-mail from Ashok Chachra to Peter Stamos (December 13, 2008) (SSMSAA1194929-31).

[145] Peter Stamos Dep. 80: 9-25, 81:1-2, August 19, 2010.

[146] Peter Stamos Dep. 81-84, 205-207, August 19, 2010.

[147] Peter Stamos Dep. 80, 84, 205, August 19, 2010.

[148] Peter Stamos Dep. 203, August 19, 2010.

[149] Peter Stamos Dep. 204, August 19, 2010.

firm in the investment community, that performs due diligence on hundreds of investment opportunities annually, concludes that a particular investment is rejected outright for warning signs of fraud, at a minimum, industry customs and practices would be to perform additional, independent due diligence.

IX. OPINION NO. 2

DUE DILIGENCE CONSISTENT WITH INDUSTRY CUSTOMS AND PRACTICES WOULD HAVE CONFIRMED IN REAL TIME THAT MADOFF COULD NOT HAVE BEEN LEGITIMATELY ENGAGED IN HIS PURPORTED INVESTMENT STRATEGY AND THEREFORE WAS RUNNING A FRAUDULENT INVESTMENT ADVISORY BUSINESS

128. Following in the section below is a summary of what would have been revealed had basic, customary due diligence processes been performed on BLMIS. At the outset, it is important for me to note that when I performed my due diligence on Madoff invested funds, I did not have access to the lion's share of financial and transaction information that Sterling had available to it. For example, I did not have the same transaction level information that was provided through trade confirmations and customer statements to Sterling. Therefore, I was unable to use any transaction level information in my due diligence analyses back in 2005. I was limited to analyzing monthly returns, which by itself was sufficient for me to conclude that Madoff was not and could not be doing what he said he was doing. As described below, increased knowledge from information like trade confirmations and customer statements enables a number of additional due diligence analyses, that would further confirm Madoff was not engaged in the strategy he purported to be following.

129. The due diligence analyses below tracks the same Five P construct discussed above in Section VII, namely an analysis of People, Process, Portfolio, Performance, and Pricing. The analyses are the same types of analyses, consistent with industry customs and practices that Sterling's own hedge fund, Sterling Stamos, performs on a routine basis as

part of their ongoing due diligence for its investments.[150]

A. People (Madoff and His BLMIS Personnel)

130. It is fundamental for an investor to continually analyze and investigate the manager and his personnel when conducting due diligence. For example, post-investment in Bayou, Sterling Stamos investigated Bayou's management, and the results of this investigation contributed in part to Sterling Stamos's withdrawal from Bayou.[151]

131. A global investment management firm as large as BLMIS (growing to tens of billions under management) would, in my experience, have employed a workforce that possessed credentials more like traditional investment management firms.[152] For example, typical credentials for general directors or general portfolio managers at hedge funds include bachelor's degrees at a minimum, and likely master's degrees, with PhDs possible as well.[153] Due diligence would have revealed that BLMIS had a limited number of personnel, with no advanced education or training, purportedly implementing a multi-billion dollar investment strategy.[154]

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[150] Sterling Stamos "Letter to Investors" (October 5, 2005) (SSMSAC0000181-83).

[151] Sterling Stamos "Redemption Memorandum" (February 28, 2005) (SSMSAC0000149).

[152] A FINRA *BrokerCheck* providing a business description for BLMIS would have shown, at any time, that Madoff did not disclose his investment advisory business even though Madoff was making all investment decisions, and in all other respects serving as an investment adviser to investors such as Sterling. CRD Number 2625 and SEC File No. 8-08132.

[153] General directors are individuals who, regardless of title, focus on daily operations such as trading, modeling, research, risk control, and general fund support. Considering data between 1975 and 2010, 100 percent of directors or managers held bachelor's degrees, 61 percent held master's degrees, 29 percent held PhDs, 1 percent held JDs, 8 percent were Chartered Financial Analysts ("CFA"), 4 percent were Certified Public Accountants ("CPA"), and 1 percent were Financial Risk Managers ("FRM"). Barclay Hedge Database, August 2011.

[154] In its SEC Form ADV, BLMIS was listed as having no more than five employees who performed investment advisory (i.e., BLMIS) functions. It would be difficult for a multi-billion dollar investment management business to operate with so few employees who served in that role. The fact that BLMIS may have been employing a black box as part of its strategy would necessitate that these employees be capable of developing mathematical algorithms or other related analyses for the black box. For this reason alone it would be important to investigate the backgrounds (e.g. education) of these employees. SEC Form ADV (August 25, 2006) (PUBLIC0003729-62 at 34). BLMIS listed one-to-five total employees performing investment advisory functions.

B. Process

132. Performing due diligence on Madoff's investment strategy and execution process would have identified numerous additional red flags to the ones discussed above, which would have further confirmed that Madoff was not doing what he said he was doing, and therefore was running a fraudulent IA business.

1. Split-Strike Conversion Strategy

133. The dominant investment strategy purportedly employed by BLMIS for Sterling was the SSC strategy. As conveyed by Madoff as early as 1990, in its simplest form the strategy includes buying a stock while concurrently selling out-of-the-money call options and buying out-of-the-money put options.[155] Initially this was the strategy conveyed on customer statements.[156] Beginning in 1992/1993, Madoff purportedly began to implement the strategy using a basket of stocks, and selling call options on an index correlated to the basket, and buying put options on an index correlated to the basket.[157] This shift in the investment adviser's philosophy and strategy is exactly the sort of significant change that should have brought about new independent due diligence. Because the majority of the SSC strategy implemented in Sterling's BLMIS accounts used the basket approach, the analyses below relate to the strategy assuming the basket approach.

a) Expected Volatility

134. The SSC strategy that Madoff claimed to implement is arguably a way for investors to reduce risk,[158] where risk generally refers to the volatility of returns.[159] In other words, a

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[155] Gonder Memorandum (August 24, 1990) (STESAH0007078). *See also* Peter Stamos Dep. 114, August 19, 2010 and Friedman Dep. 132, June 22, 2010.

[156] Fred Wilpon Customer Statement, account number 1-02330-3-0, for November 1985 (November 30, 1985) (MF00016095); Fred Wilpon Customer Statement, account number 1-02330-4-0, for November 1985 (November 30, 1985) (MF0016096).

[157] Friedman Dep. 132-133, June 22, 2010.

[158] Investors face many types of risk, often characterized as financial or non-financial risk. Market risk associated with exposure to changing stock prices, which is one source of financial risk, is of particular concern for investors in equities. Unless otherwise stated, the "risk" discussed herein refers to market risk.

strategy is highly risky if its returns fluctuate widely over time or if returns are not commensurate to risk. For example, a strategy that provides a steady two percent return each month for 10 years has no volatility, and hence little risk since the investor can predict with great precision what his or her returns will be for the next month. Conversely, a strategy that provides a different return each month, ranging say from -10% to +10%, would have a much higher level of volatility and thus be considered a much riskier investment because predicting the next month's returns would be very difficult.

135. The SSC strategy reduces portfolio volatility (both upside and downside), and thus risk, by limiting the gains and losses that are possible. Under a SSC strategy the investor purchases an equity portfolio, but then limits both gains and losses to some pre-determined range, based on the call and put options.[160] It is for this reason that the strategy may be used by individuals seeking to protect large concentrated positions in a single stock.

b) Expected Losses

136. Madoff purportedly selected his basket of 40 stocks such that returns would correlate with the S&P 100 index, thus Madoff's position would also have been expected to move with the overall S&P 100 index when its value was between the put and call strike prices. Since the S&P 100 has incurred losses 41 percent of the time (in months) from 1978 through 2008, Madoff's SSC strategy should experience at least some material percentage of negative return months.[161] In fact, it would have been, in my opinion, mathematically impossible for an investor implementing the SSC strategy to eliminate downside risk, as Madoff did, while generating returns in excess of default risk-free Treasury returns over any significant period of time.[162] (See Section IX.C and IX.D)

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159 An asset's volatility is often measured as its standard deviation. *See* CFA Program Curriculum, Level III Volume 4 at 229 (2011).

160 When an investor attempts to reduce his or her position's exposure to market prices by purchasing puts and/or selling calls, he or she is said to be "hedging" the position.

161 Calculated based on Bloomberg Market Data.

162 The stability of Madoff's returns becomes progressively less and less likely as the analysis period increases.

2. Out-of-Range Trades

137. Due diligence on Madoff's execution of the SSC strategy would have revealed a number of impossibilities, further reinforcing the evidence of suspicious activity occurring at BLMIS. For example, the customer statements and trade confirmations that Sterling received included numerous instances where Madoff reported buy and sell transactions at prices either above the high stock price for the day or below the low stock price for the day as reported by Bloomberg.[163]

138. Legitimate trades could not have occurred at all of the prices reported by BLMIS. Since Bloomberg collects its stock price data directly from the exchanges as well as over the counter markets, the prices as claimed by BLMIS would have been picked up by Bloomberg had the trade actually occurred.[164] In the cases when those prices are higher than the high for the day or lower than the low, BLMIS's executed prices would have become the highs and lows for the day.[165] These occurrences are not only strong red flags, they are indicia of fraud, because, simply stated, there was never a trade in the market at the price Madoff reported.

a) Equities

139. Between 2000 and 2008 there were 4,965 transactions across Sterling-related accounts that reported equity prices outside of the daily price range on the day the trade was made.[166] These 4,965 transactions reflected approximately 13 million shares traded outside of the daily range. BLMIS reported a transaction *above* the daily price range 2,463 times, and a

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[163] Examples include the purchase of MSFT shares for 9 accounts on July 2, 2003 at $26.31 when the daily low was $26.45 and sale of JPM shares for 181 accounts on February 16, 2001 for $52.59 when the daily high was $52.00. I adjusted the reported trade prices for the $0.04 commission that was purportedly included in the share price prior to September 2006. Fred Wilpon Customer Statement (February 28, 2001) (MDPTPP03844494); Judith A. Wilpon Customer Statement (July 31, 2003) (MDPTPP03847336).

[164] Bloomberg: Data Solutions (November 16, 2011), http://www.bloomberg.com/enterprise/data_solutions/

[165] Alternatively, had the prices indicated in the account and trading statements been typos or errors, Sterling should have expected corrections from BLMIS with the appropriate prices.

[166] The source information for trading activity was the "Settled Cash" table populated by BLMIS each month, and backed up each month. While backup tapes for the Settled Cash table were not available for every time period, they existed for most months between 1998 and 2008. Note that no data existed for 1999 for any Sterling account.

transaction *below* the daily price range 2,502 times.[167]

140. It is my opinion that, with more than 13 million shares and 4,965 transactions being falsely reported on the face of customer statements and/or trade confirmations, such impossible equity prices, over so many years, means that the trades did not happen: i.e., the trades as reported on investor documentation are strong red flags where the only reasonable explanation is fraud.

b) Options

141. In addition to the equity transactions, over this same time period (2000 through 2008) there were also 64,127 options contracts (i.e., 6.4 million option shares) representing 1,709 transactions that were traded *outside* of the daily price range across Sterling-related accounts. Of these transactions 850 were traded *above* the daily high and 859 were traded *below* the daily low.[168]

142. These out-of-range options trades were indicia of fraud because they were impossible. Madoff was not actually making the trades that were claimed on trade confirmations or customer statements provided to investors such as Sterling on a regular basis. The only rational explanation for so many falsely reported trades is (and was) fraud.

3. Impossible Option Volumes[169]

143. Reviewing the customer statements Sterling received and tracked, along with readily

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167 The results are based on comparing Settled Cash table against historical pricing data from Bloomberg.

168 Based on comparing Settled Cash table against historical price data from the Chicago Board Options Exchange ("CBOE").

169 While the purported trade confirmations received by Sterling indicate that the options transactions were exchange-traded (based on the name and CUSIP number) I have also considered the possibility that these theoretical transactions were done off the exchange, or "Over-The-Counter" ("OTC"). I conclude that the transactions could not have been done OTC for several reasons. First, OTC transactions tend to be in the $5-$25 million dollar range which would have required many transactions to be done across multi-billions of dollars in assets with theoretically many sophisticated global counterparties. Significantly, any larger OTC transactions would be done only on an appointment or negotiated basis and would require days, weeks, or even months to negotiate. Furthermore, these counter-parties, whoever they might have been would themselves have to offset their own risk (i.e. hedge) which would have to be done back in the exchange traded market. Therefore, if there was insufficient volume in the exchanged-traded market, then there would, in my opinion, be insufficient volume for Madoff's counter-parties in the OTC market to absorb and then lay off this transferred risk.

available market data, such as the CBOE, due diligence would show that BLMIS was reporting option trading volume widely in excess of the total daily volume on the option exchanges. Based on a review of total daily volumes on the CBOE for various options, it simply was not possible that Madoff was trading the number of options indicated on the customer statements.

144. As part of the purported SSC strategy, Madoff traded call and put options on the S&P 100 for Sterling. The trade confirmation slips received by Sterling contained a CUSIP number for each S&P 100 option indicating the options were traded on an exchange as opposed to custom OTC contracts that are not traded on an exchange.[170]

145. For the time period January 2000 through November 2008, where comprehensive BLMIS transaction data for options exist, Madoff traded in 171 different call options on 417 days in 41,752 transactions.[171] I compared the volume of call options traded in Sterling's BLMIS account against the market, and 44.6 percent had a purported number of contracts above the daily market volume.[172] Looking further into specifically the transactions that traded above the daily market volume, I found that the number of shares transacted by Madoff greatly exceeded the total share volume transacted on the exchange. The following figure illustrates these impossible call option share results (*see also* Appendix IX).

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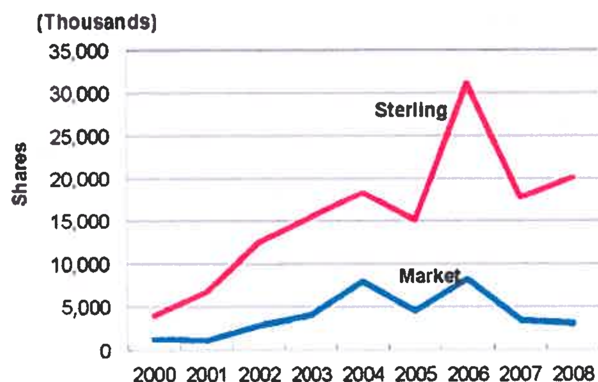
[170] BLMIS Trade Confirmation to Sterling Doubleday Enterprises (Trade Date December 23, 1991) (STESAG0020258); BLMIS Trade Confirmation to Sterling Doubleday Enterprises (Trade Date November 8, 1991) (STESAG0020364).

[171] Settled Cash and Bloomberg Market Data.

[172] Options are traded as a "contract" where each contract represents 100 options. The number of call and put contracts bought or sold by BLMIS was determined based on the purported equity positions as consistent with the SSC strategy. In determining how many transactions included contracts above the daily market volume, I aggregated volume across all Sterling-related accounts, therefore the 44.6 percent reflects the percentage of unique transactions in Sterling-related accounts with volume above the daily market volume. The 41,752 total number of transactions reflects 538 unique transactions with a specific transaction date, strike price, and maturity—44.6 percent of which had reported volumes above the daily market volume.

Figure 10
Sterling BLMIS Call Option Volume Relative to Corresponding Market Volume 2000-2008[173]

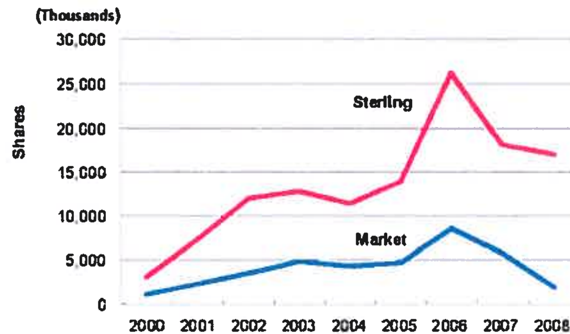


146. Similarly, as it relates to put options, Madoff traded 167 different put options on 390 days through 36,124 transactions. For the transactions on put options, 42.0 percent had a purported number of contracts above the daily market volume.[174] Similar to the call options, for the purported put contracts which Madoff traded above the daily market volume, the number of shares transacted by Madoff greatly exceeded the total share volume transacted in the market. The following figure illustrates these impossible put option share results.

[171] Includes option trades made between 2000 and 2008, where the Sterling BLMIS transacted volume was greater than the market volume. Sources include Settled Cash table and CBOE (results may be understated as the settled cash table does not include data from May 2007 and September 2001).

[174] In determining how many transactions included contracts above the daily market volume, I aggregated volume across all Sterling-related accounts; therefore, the 42.0 percent reflects the percentage of unique transactions in Sterling-related accounts with volume above the daily market volume. The 36,124 total number of transactions reflects 486 unique transactions with a specific transaction date, strike price, and maturity—42.0 percent of which had reported volumes above the daily market volume.

Figure 11
Sterling BLMIS Put Option Volume Relative to Corresponding Market Volume 2000-2008[175]



147. Sterling's BLMIS accounts not only purchased or sold options in quantities far above the daily volume, the account statements also reflect the fact that Sterling owned far more options than existed in the market place. In fact for the period 2000 through 2008, based on the customer statements, on average, Sterling owned more call options than those in existence on the exchange for 81 days out of each year. Similarly, on average, Sterling owned more put options than those in existence in the market place for 88 days out of each year.[176]

148. Additionally, these figures reflect Sterling's BLMIS accounts only. Madoff had billions of other dollars under management, meaning that the volumes necessary to implement the strategy were even more beyond market capacity. However, even when ignoring all of the other theoretical options traded for the billions Madoff had in AUM, Sterling's own BLMIS volume was far in excess of the total market volume by a significant percent of the time in any given year. The fact that call and put option volumes were greater than the market volume more than 50 percent of the time was an obvious red flag that Madoff was not executing the transactions he was reporting on customer statements. The only

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[175] Includes option trades made between 2000 and 2008. Sources include Settled Cash table and CBOE.

[176] Based on transaction data in the Settled Cash table as well as daily open interest data from the CBOE for the options purportedly owned by Sterling's BLMIS accounts.

explanation for these impossible transactions is (and was) fraud.

4. Custodian and Administrator

149. Basic due diligence would also have revealed that in addition to being its own broker-dealer (*see* Section VIII.15) BLMIS operated as its own custodian and administrator – outside of industry norms. While some investment management firms may operate as their own service provider in some areas (e.g., prime broker), rarely do they operate as their own provider in all of these areas.

150. All investment vehicles, whether funds or separate accounts, have a custodian – the entity that holds the assets being invested.[177] Custodians hold the assets of the investors for safekeeping. If there is a third-party custodian, client assets are safe even if the investment vehicle becomes insolvent.[178] If the investment adviser represents himself as the custodian, it is rife with the possibility of fraud, in that the adviser could theoretically misreport or misappropriate the assets, which is in fact what occurred with BLMIS. Having third parties buy and sell securities (i.e., through the use of prime brokers) and hold securities (i.e., through the use of custodians) helps deter potential fraud. This organizational model using separate entities is industry practice for the investment management industry and applies to both hedge funds and managed accounts.

151. In addition to custodians, investment vehicles also employ the services of an administrator. Administrators offer services including: fund accounting, shareholder servicing, reviewing regulatory requirements, structuring alternative investment instruments, and stock exchange reporting.[179] Similar to prime broker and custodian activities, investment

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[177] Goldman Sachs, UBS, JPMorgan Chase, Morgan Stanley, and HSBC are the top five custodians today, in terms of number of funds serviced, in the world. Hedge Fund Network, August 2011. Less than 2.5 percent of currently active hedge funds report being their own custodian: 84 out of 3,407 funds. Barclay Hedge Database, August 2011. Additionally, of the hedge funds that did maintain custody of their clients' assets, almost half of the hedge fund families of which these funds were a part reported using other custodians for other funds in the family: 4 out of 9 hedge fund families reporting using other custodians. Hedge Fund Network, August 2011.

[178] Mark Berman, *Hedge Funds and Prime Brokers* 42 (London: Risk Books 2009).

[179] Jason A. Scharfman, *Hedge Fund Operational Due Diligence* 16 (Hoboken: John Wiley & Sons, Inc. 2009).

vehicles typically do not act as their own administrator.[180]

5. Lack of a Well-Known and Established Auditor

152. The purpose of the auditor is to review the financial statements of the audited firm and determine the legitimacy of the financials in agreement with generally accepted accounting, corporate, and government policies.[181] Sterling (The Mets) employs KPMG as its auditor and the Sterling Stamos fund employs Ernst & Young.[182]

153. Sterling testified that it knew who BLMIS's auditor was.[183] Basic due diligence (such as running a Dun & Bradstreet report, a site visit, or phone call) would have immediately shown that Friehling & Horowitz was a firm with one active accountant, that simply did not have the capability to provide adequate audit support to a firm the purported size of BLMIS. Madoff was a global investment adviser and BLMIS's purported size would have made it one of, if not the largest, hedge fund in the world during the 2000s (*See* Appendix V). The fact that BLMIS, with public estimates of AUM as much as $7 billion by 2001, did not have a well-known, well-established, and well-equipped auditor was a serious warning sign that (like in Bayou) suspicious activity could be (and in fact was) occurring at BLMIS. In 2006, when BLMIS registered as an investment adviser it reported $11.7 billion AUM and still did not use a well-known and established auditor.[184] Nor did BLMIS change auditors in 2007 or 2008 when AUM reported to rise to $13 billion and

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[180] Less than one percent of hedge funds handle the responsibilities of an administrator for their own operations. Calculated using Barclay Global DataFeeder August 2011.

[181] Occupational Outlook Handbook (2010-11 ed.) (November 11, 2011). www.bls.gov/oco/ocos001.htm#nature.

[182] "12/31/07 Audit Confirmation – Mets Limited Ptr" (March 5, 2008) (ELIP-BR00002602); Sterling Stamos "Letter to Investors" (October 5, 2005) (SSMSAC0000181-83). KPMG and Ernst & Young are two of the top four accounting firms (PwC, Ernst & Young, KPMG, and Deloitte & Touche are commonly referred to as the "Big 4"). These firms audit more than 50 percent of U.S. hedge funds, including providing auditing services to 18 out of 20 of the largest hedge funds. Barclays' Fund Graveyard Database as of August 2011.

[183] Cynthia Rongione (Bernstein) Dep. 218-219, November 15, 2011; *See also* Email from Cynthia Bernstein to David G. Friehling (August 28, 2008) (STESAK0004065).

[184] SEC Form ADV at 8 (August 25, 2006) (PUBLIC0003729-62 at 36).

$17 billion respectively.[185]

154. The warning signs associated with using Friehling & Horowitz would have been even more pronounced at the time it was revealed that Bayou relied on a fabricated auditor in order to help perpetrate its fraud (*see* Section VIII.13). Discovering that BLMIS's auditor was a single person accounting firm with no ability or capacity to audit a company such as BLMIS, with billions of dollars under management, was a strong red flag that the situation was rife with opportunity for fraud. Auditors are, under typical industry customs and practices, expected to act as a significant check on the financial transactions of their clients—and without a capable auditor behind BLMIS there was a large opportunity for fraud to be committed.

C. Portfolio

155. The analyses I performed below reflect industry practices for due diligence, and are consistent with the analyses I typically perform for high net worth and institutional clients as to both their consideration of new investments and ongoing monitoring of existing investments.

1. Basket Return Relative to Benchmark

156. One technique employed in quantitative due diligence is regression analysis. Regression analysis is a statistical technique for modeling the relationship between two or more variables. It is a common analysis in the context of quantitative due diligence, and was employed by Sterling's own hedge fund as part of their initial and ongoing due diligence procedures.[186]

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[184] SEC Form ADV, Bernard L Madoff Investment Securities (January 24, 2007) (PUBLIC0003763-96 at 3771); SEC Form ADV, Bernard L. Madoff Investment Securities (January 7, 2008) (PUBLIC0003834-64 at 3840).

[186] *See* Sterling Stamos Response to the Segal Advisors Investment Advisors Questionnaire (July 2007) (SSMSAA0001625-86 at 74) where Sterling Stamos includes "Regression Analysis of Hedge vs. Security Fund Returns." *See* Sterling Stamos Response to DeMarche Associates' Hedge Fund Manager Questionnaire (February 1, 2005) (SSMSAA0002134-58 at 54) where regression analysis is listed as part of ongoing monitoring. *See also* Sterling Stamos: Portfolio Team – Policies and Procedures (January 2005) (SSMSAA0015717-82 at 72).

157. A major feature of the SSC strategy from 1992 onward involved the so-called basket trades. Madoff claimed the basket trades consisted of purchasing a basket of 35 to 50 stocks correlated with the S&P 100 Index. Madoff further claimed that he would sell call options on the S&P 100, which provided Madoff a premium payment in exchange for the equity basket's potential increase in value above some threshold (i.e., the "upside" or the "strike price" of the call option), and would buy put options to protect against the equity basket's potential decline in value below some threshold (i.e. the "downside").

158. It is industry practice to monitor the performance of an investment adviser relative to benchmarks in order to determine how much of the fund's return is due to general market behavior as opposed to active management. The component of the return due to a manager's ability is commonly referred to as the "alpha" earned by the investment adviser.[187] Investors measure the alpha of the fund in order to assess the effectiveness of the fund manager.

159. Due diligence performed on the returns of Sterling's BLMIS accounts would show that the basket trades (the combination of stock, put and call positions) generated an absolute return of two percent with unbelievable consistency (*see* Appendix VIII).

160. Basic regression analysis of Sterling's BLMIS returns against the benchmark would have shown that Madoff made approximately two percent per basket trade regardless of corresponding returns in the market. Schedule 27 in Appendix VIII illustrates this result. The relatively low R-Squared, 0.17, of the regression is indicative of the fact that returns are being achieved independent of market conditions. Of greatest concern is that the calculated intercept, 0.0211 (indicating an alpha of 2 percent), has a t-stat of 10.56 which indicates virtual certainty, and a level of confidence unattainable in the investment

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[187] Mathematically, this is done by performing a linear regression of portfolio return on benchmark returns. The slope of the regression line is referred to as beta, while the intercept is referred to as alpha. For a fuller explanation, *see* William F. Sharpe, *Investments* 611-16 (New Jersey: Prentice Hall, 2nd ed. 1981).

management business.[188]

161. Results showing Madoff's absolute returns were consistently two percent per basket trade regardless of what the market did were a significant red flag that Madoff was not executing the strategy he purported to implement, or indeed any strategy. These results are, in my opinion, statistically impossible and were and are indicia of fraud.

2. Lack of Material Volatility Inconsistent with Purported SSC Strategy

162. Another common technique employed in due diligence is referred to as "reverse engineering." The goal of reverse engineering is to replicate, as best as possible, the investment strategy being pursued. This type of due diligence serves as a check on investment returns, as well as an analysis for determining reasonable expectations for performance, as well as volatility.

163. The volatility of Madoff's SSC strategy should, at a minimum, incorporate two prevalent market risks: (i) the volatility of a SSC strategy on the S&P 100 Index (i.e., purchase the S&P 100 Index and the put options on the S&P 100 Index, and sell the S&P 100 Index call options), and (ii) the volatility of the difference in performance of the top 40 stocks in the S&P 100 versus the actual S&P 100 index. Together these two data points reflect the SSC strategy as purportedly implemented by Madoff where the top 40 stocks are purchased (over a few times during the performance year), and call and put options on the S&P 100 index are sold and bought respectively.[189] I modeled the volatility of return for each strategy separately, the results of which are presented below, along with the volatility of Sterling's BLMIS returns.[190]

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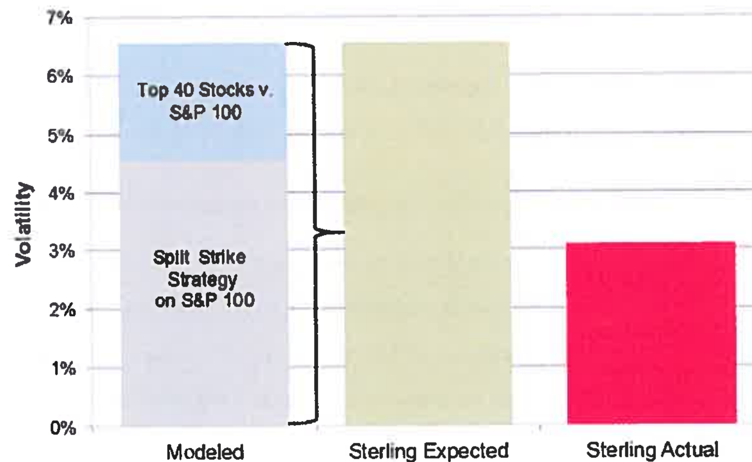
[188] The t-stat for a coefficient in a linear regression is the estimate of its value divided by the standard error of the estimate, and is used to create a confidence interval about the estimated coefficient. The larger the t-stat, the more likely the true coefficient differs from 0.0. *Quantitative Methods for Investment Methods* 326-27, Association for Investment Management and Research (Baltimore: United Book Press, Inc., 2001).

[189] For this analysis, the top 40 stocks of the index were chosen, which creates a basket that is highly correlated to the index. *See* Friedman Dep. 133, June 22, 2010.

[190] I assumed that the strike price of the put is 1.5% below the initial spot price of the index and that the strike price of the call is 2.0% above the initial spot price of the index. The procedure is repeated every month for 216 months, from December 1990 to November 2008. I used the historical option price data (closing price) from

Figure 12
Summary Performance Statistics for SSC Strategy Modeling (1990-2008)[191]



164. As illustrated above, the expected volatility of the two primary market risks is significantly higher than the actual volatility produced by Sterling's BLMIS returns. This asymmetric comparison of volatilities was a significant warning that the risk-adjusted returns produced by BLMIS for the Sterling accounts were suspicious. This due diligence also reveals that the volatility of Sterling's BLMIS returns was inexplicably different than what should have been expected.

D. Performance

165. An important step in the ongoing due diligence process is to assess the performance of the

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CBOE and the index price (adjusted for dividends and splits) from Bloomberg. I used the prevailing business day 3-month U.S. Treasury bill rates from Federal Reserve to proxy the risk free rates in pricing the options and computing interest and a 1.5% dividend yield on the S&P 100 when pricing the options.

191 The historical data maintained by BLMIS, that I reviewed, did not include sufficient information to calculate monthly returns for Sterling's BLMIS accounts prior to 1996. Therefore, monthly data prior to 1996 reflects fee-adjusted returns for Fairfield Sentry, a large, well-known Madoff feeder fund. It is industry practice when conducting due diligence exercises to supplement returns in this manner. Sources include StorQM Customer Statements (weighted average across Sterling accounts), Bloomberg market data, NeuePrivat Bank November 17, 2008. Sterling Stamos also used Fairfield Sentry as representative of Sterling's BLMIS accounts their analyses. Chichra Dep. 154-155, 202, October 8, 2010.

strategy. Sterling began investing with Madoff in 1985 and remained invested through his collapse in December 2008.[192] By 2007, Sterling had more than $750 million reported on its BLMIS statements.[193] Sterling's annual returns were never lower than 10 percent in any year, and only had 8 months of negative returns out of 216 total months in an 18 year period.[194]

166. The analyses that follow are consistent with the analyses Sterling's hedge fund, Sterling Stamos, performs on its many of own investments. These analyses are customary and typical in the industry, as well as appropriate, and necessary in order to help guard against fraud and other deceit or misappropriation by an investment adviser.

1. Comparison to Peers and Benchmarks

167. In the due diligence process, a proper assessment of investment adviser performance is not conducted in a vacuum. It is appropriate to continually evaluate the performance of an investment adviser in the context of other funds, benchmarks and general market movements. It is important to note that while the cumulative red flags described at Section VIII should have prompted due diligence, institutional clients and high net worth clients, in my experience, often conduct peer analysis on a regular basis. The peer analysis presented herein uses publicly-available information available from third-party providers, and incorporates the evaluation of widely-recognized, market events.[195]

168. The peer analysis presented herein focuses on two primary metrics used to evaluate investment adviser performance on a risk-adjusted basis, namely the Sharpe Ratio and the Sortino Ratio. The Sharpe Ratio measures the amount of return above a risk free rate per

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[192] BLMIS Customer Statement for Sterling Equities (October 31, 1985) (STESAH0007297).

[193] SQL Database: StorQM Customer Statements.

[194] SQL Database: StorQM Customer Statements.

[195] A peer group is a collection of other funds with comparable mandates. Typically, funds in a peer group will invest in identical assets, or sectors employing similar management technique. Edward J. Stavetski, *Managing Hedge Fund Managers* 71 (Hoboken, New Jersey: John Wiley & Sons 2009); G. Timothy Haight, Stephen O. Morell & Glenn E. Ross, *How to Select Investment Managers & Evaluate Performance* 248 (Hoboken: John Wiley & Sons, Inc. 2007).

unit of risk. It is calculated as the mean portfolio return less a risk free return ($r_p - r_f$), divided by the standard deviation of the returns. A higher Sharpe Ratio indicates that the investment is generating more return for the same amount of risk. The Sortino Ratio is a form of the Sharpe Ratio where only downside risk is incorporated into the formula by calculating the standard deviation of returns that are only negative.[196] In this manner, the Sortino Ratio does not penalize performance for being volatile if the volatility always results in positive performance.

169. I chose the Sharpe Ratio and the Sortino Ratio based upon the long-standing popularity of these metrics in the investment management industry, as well as on their acceptance within the academic community.[197] The ratios are common statistics used to compare performance between two or more funds, and both of these risk-adjusted performance metrics were well-established due diligence tools during the relevant time period of Sterling's investments with Madoff. Sterling Stamos used these exact same sort of metrics themselves when evaluating investment performance.[198] Sterling Stamos communicated to Sterling about Madoff's and various Sterling Stamos funds' Sharpe Ratios, standard deviations, and percentage of positive months.[199]

170. Two other related metrics, the number of months with positive returns and the number of months with negative returns, are also included in the analysis as they are helpful in

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[196] In the formula for Sortino Ratio the positive returns are set to 0 for purposes of calculating the standard deviation.

[197] *See* the following: (i) http://www.morningstar.com/InvGlossary/sharpe_ratio.aspx; (ii) http://www.morningstar.com/InvGlossary/sortino_ratio_definition_what_is.aspx; (iii) http://www.russell.com/us/glossary/analytics/sharpe_ratio.htm; (iv) http://www.russell.com/us/glossary/analytics/sortino_ratio.htm; and (v) 2011 CFA Curriculum, Level III, p. 172. The Sharpe Ratio was developed by William Sharpe and made public in his 1966 Journal of Business publication *Mutual Fund Performance*. William Sharpe, *Mutual Fund Performance*, The Journal of Business 119-128 (Vol. 39, No. 1, Part 2, January 1966). The Sortino Ratio was developed by Frank Sortino and Lee Price and made public in their 1994 Journal of Investing publication *Performance Measurement in a Downside Risk Framework*. Frank Sortino and Lee Price, *Performance Measurement in a Downside Risk Framework*, The Journal of Investing 59-64 (Vol. 3, No.3 Fall 1994).

[198] *See, e.g.*, "Net Performance Overview" (undated) (SSMSSA00284955-4984).

[199] E-mail from Soraya Cohen to David Katz re: Updated Performance Spread Sheet (October 10, 2005) (STESAT0001316); Email from Ashok Chachra to Soraya Cohen re: Updated Performance Spread Sheet (October 10, 2005) (SSMSAA0231352).

evaluating the performance of investment advisers. Sterling Stamos also used these metrics in its comparison of performance across funds.[200]

171. Sterling's pattern of historical BLMIS returns was examined within the context of each different peer group, such as hedge funds, mutual funds, and world-class investment advisers. This range of investment alternatives casts a wide net for performance comparisons, and as further discussed below, I selected funds within these categories that exhibited similar characteristics to Madoff as related to strategy, asset classification, and/or skill of the investment adviser (e.g., when analyzing elite investment advisers).

172. As revealed below, across all four performance metrics, and across all peer groups, and across all time considered, Madoff always outperforms his peers to a degree of statistical implausibility, if not impossibility. In my opinion, it is implausible for an investment adviser to outperform, and often by a significant amount, every peer group, across virtually every performance metric, across lengthy periods of time.

a) Hedge Funds

173. My analysis of hedge fund returns involves data obtained from BarclayHedge, a comprehensive hedge fund database.[201] Using this database I created a peer group of hedge funds implementing comparable strategies to Madoff's SSC strategy.

174. BarclayHedge includes information on approximately 8,700 hedge funds, and categorizes these hedge funds into 35 different primary strategies based on the type of strategy

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200 *See, e.g.*, "Net Performance Overview," (undated) (SSMSAA00284955-84). The importance of positive returns is highlighted by Sterling's marketing materials for the Mets that advertises "Over last 25 years, Madoff returns have averaged 18% with a standard deviation of 4%" and "Above statistics predict positive annual returns 99.9% of the time." 'Lenders' Meeting Presentation - Mets" (March 9, 2004) (STESBJ0005876-924 at 903).

201 http://www.barclayhedge.com. My sample includes only "Hedge Funds," thereby excluding the following fund types: (i) Funds of Funds, (ii) CTA, and (iii) Benchmark Indices. Only hedge funds that report returns "Net of All Fees" have been included. I believe this to be consistent with reported returns of Fairfield Sentry, which was reported to be a feeder fund invested with Madoff, using the same SSC as purportedly implemented for Sterling. Michael Ocrant, *Madoff tops charts; skeptics ask how*, MAR/Hedge (Issue No. 89, May 2001) (STESAP0000204-08). For each time period examined, the sample includes only funds which published returns for every month in the period of interest. Chachra Dep. 154-155, October 8, 2010.

followed by the hedge fund.[202] Consistent with due diligence customs and practices, I reviewed the strategies/categories used by BarclayHedge, and identified those strategies that I considered most comparable to Madoff's purported SSC strategy. I identified three such strategies, and all of the hedge funds categorized by BarclayHedge in these strategies were included in my peer group ("Hedge Fund Peer Group"). The strategies/categories that I identified as most comparable to Madoff's SSC strategy were the following: (1) equity market neutral; (2) equity long/short; and (3) equity long-bias. These categories are most comparable because they invest in hedged domestic equity strategies. I further note that BarclayHedge includes American Masters Broad Market Fund LP, a hedge fund run by Tremont that was invested with Madoff, within the "equity market neutral" category. The following descriptions are provided by BarclayHedge for each strategy:

- **Equity Market Neutral:** This investment strategy is designed to exploit equity market inefficiencies and usually involves being simultaneously long and short matched equity portfolios of the same size within a country. Market neutral portfolios are designed to be either beta or currency neutral, or both. Well-designed portfolios typically control for industry, sector, market capitalization, and other exposures. Leverage is often applied to enhance returns.[203]

- **Equity Long/Short:** This directional strategy involves equity-oriented investing on both the long and short sides of the market. The objective is not to be market neutral. Managers have the ability to shift from value to growth, from small to medium to large capitalization stocks, and from a net long position to a net short position. Managers may use futures and options to hedge. The focus may be regional or sector specific.[204]

- **Equity Long-Bias:** Equity Long/Short managers are typically considered long-biased when the average net long exposure of their portfolio is greater than 30%.[205]

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[202] BarclayHedge assigns one primary strategy to each hedge fund.
[203] http://www.barclayhedge.com/research/indices/ghs/Equity_Market_Neutral_Index.html.
[204] http://www.barclayhedge.com/research/indices/ghs/Equity_Long_Short_Index.html.
[205] http://www.barclayhedge.com/research/indices/ghs/Equity_Long_Bias_Index.html.

175. I assessed the Sharpe Ratio, Sortino Ratio, and number of months with negative and positive returns for the above-described Hedge Fund Peer Group on a ten-year rolling basis over the period January 1991 through November 2008. I used a ten-year period for purposes of my performance analyses because ten years is consistent with industry practice, and more importantly, it reduces the margin of error (as opposed to using a three-year or five-year time period for example). In terms of industry practice, historical performance analyses using 10 years of data is standard for the Association for Investment Management and Research ("AIMR") Performance Presentation Standards ("AIMR-PPS").[206] The AIMR-PPS standards were first introduced in 1987. In addition, in order to be compliant under the Global Investment Performance Standards ("GIPS") published by the CFA Institute, and formally endorsed in 1999,[207] firms must initially report at least five years of historical performance, building up to a minimum of 10 years of historical performance.[208]

176. I first assembled the returns for all funds that reported monthly performance consistently from January 1991 through December 2000, which I refer to herein as the "2000 Rolling 10-Year Hedge Fund Peer Group."[209] I assembled analogous Rolling 10-Year Hedge Fund Peer Groups for 2000 through 2008.[210] I evaluated each performance metric of interest over 10 years of returns data for each of the nine Rolling 10-Year Hedge Fund Peer Groups. For example, the Sharpe Ratios in each ten-year period presented herein were

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206 *AIMR-Performance Presentation Standards*, Association for Investment Management and Research 4 (2001), www.aimr.org.

207 GIPS was endorsed in 1999 by AIMR, the predecessor to CFA Institute.

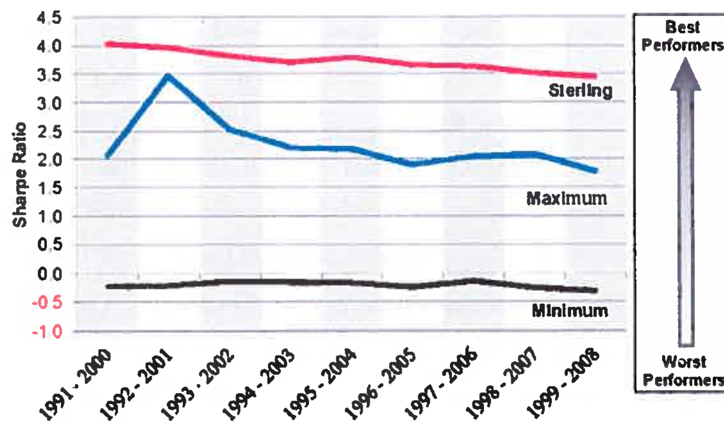
208 CFA Institute, Global Investment Performance Standards 2 (2010).

209 This is the first ten-year period in the dataset with at least 30 funds. The peer group for this period includes 58 funds.

210 Each ten-year period includes a different set of hedge funds (i.e., those hedge funds for which ten years of monthly data is available over the relevant time period).

calculated using returns data over 120 months.[211]

Figure 13
Sharpe Ratio for Hedge Fund Peer Group v. Sterling BLMIS[212]
Rolling 10-Year Periods Ending 2000-2008



177. The Sharpe Ratio for Sterling was higher than the maximum Sharpe Ratio of any fund in the Rolling 10-Year Hedge Fund Peer Groups for every period for which data was provided (2000 through 2008).

178. The only year in which the Sharpe Ratio for the Hedge Fund Peer Groups was somewhat close to that of Sterling, was 2001. Interestingly, the fund that generated a Sharpe Ratio close to Sterling's for the 2001 Rolling 10-Year Period was the American Master's Broad Market fund, which was managed by Tremont and invested with Madoff. In other words, the only fund which produced a 10-Year Sharpe Ratio from 2000 through 2008 that was close to Sterling's was a Madoff-managed Tremont fund.

179. Charts of the 2000 and 2008 10-Year Periods highlight Sterling's position as a significant

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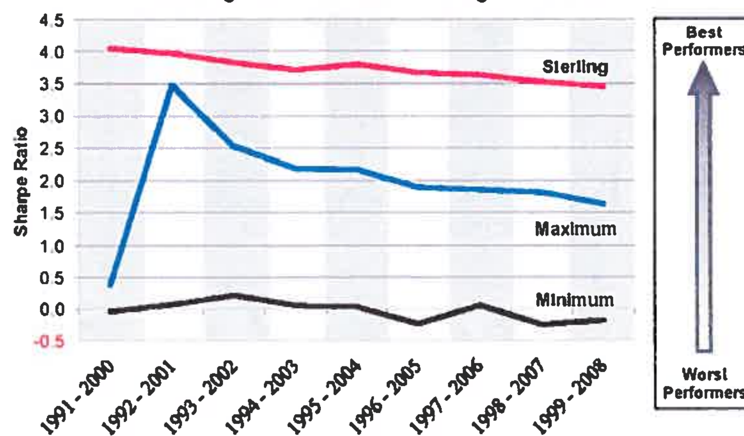
[211] Given that Madoff's operations stopped in December 2008, the 2008 Rolling 10-Year Peer Group runs from January 2000 through November 2008. Accordingly, the metrics for this peer group are calculated over 119 months of returns data.

[212] 2000 is the first year in which there is sufficient data available for a 10 year period. 2008 data is through November 2008. Sources include StorQM Customer Statements, Settled Cash table, BarclayHedge Database, Neue Privat Bank November 17, 2008, Federal Reserve FRB H.15 Release.

outlier in the distribution of hedge fund peers, regardless of what time period is analyzed (*see also* Appendix VI). The Sharpe Ratio for Sterling was a red flag in 2000 as much as it was in 2008 (and all the years in between).

180. While the figure above includes all hedge funds in the Hedge Fund Peer Group, the same conclusions, by definition, are drawn from the three strategy/categories that comprise the Hedge Fund Peer Group. That is, if the maximum Sharpe ratio across all hedge funds in all strategies is less than the Sharpe ratio for Sterling's BLMIS accounts, then the maximum Sharpe ratio in any one strategy/category will be less than the Sharpe ratio for Sterling's BLMIS accounts. The figures below illustrate this:

Figure 14
Sharpe Ratio for Equity Market Neutral Hedge Funds v. Sterling BLMIS[213]
Rolling 10-Year Periods Ending 2000-2008



[213] 2000 is the first year in which there is sufficient data available for a 10 year period. 2008 data is through November 2008. Sources include StorQM Customer Statements, Settled Cash table, BarclayHedge Database, Neue Privat Bank November 17, 2008, Federal Reserve FRB H.15 Release.

Figure 15
Sharpe Ratio for Equity Long/Short Hedge Funds v. Sterling BLMIS[214]
Rolling 10-Year Periods Ending 2000-2008

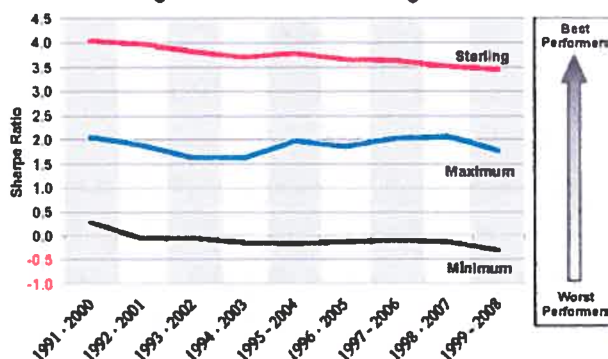
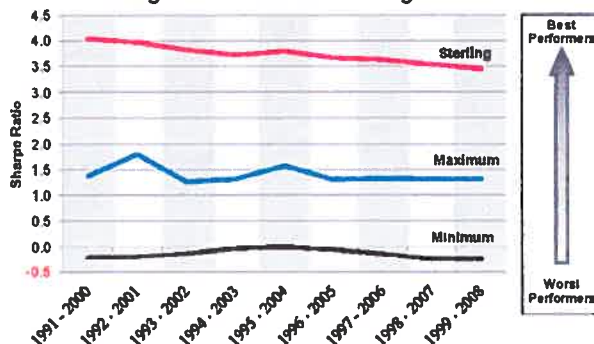


Figure 16
Sharpe Ratio for Equity Long-Bias Hedge Funds v. Sterling BLMIS[215]
Rolling 10-Year Periods Ending 2000-2008



181. The Sortino Ratios for Sterling were also significantly higher than the maximum for the Rolling 10-Year Hedge Fund Peer Groups for every period for which data was provided as illustrated below. The Sortino Ratios for Sterling's BLMIS accounts are so much higher

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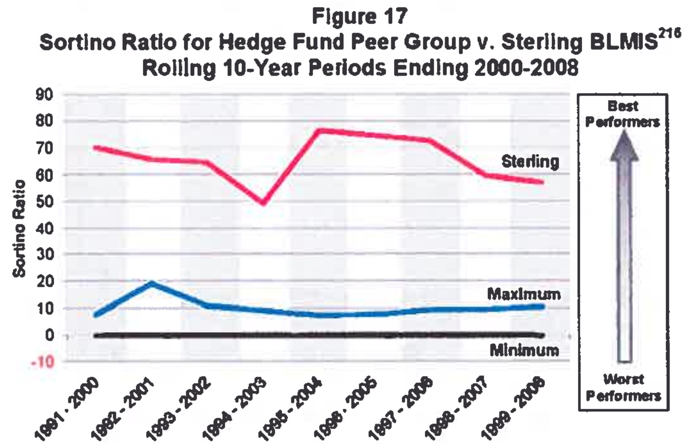
[214] 2000 is the first year in which there is sufficient data available for a 10 year period. 2008 data is through November 2008. Sources include StorQM Customer Statements, Settled Cash table, BarclayHedge Database, Neue Privat Bank November 17, 2008, Federal Reserve FRB H.15 Release.

[215] 2000 is the first year in which there is sufficient data available for a 10 year period. 2008 data is through November 2008. Sources include StorQM Customer Statements, Settled Cash table, BarclayHedge Database, Neue Privat Bank November 17, 2008, Federal Reserve FRB H.15 Release.

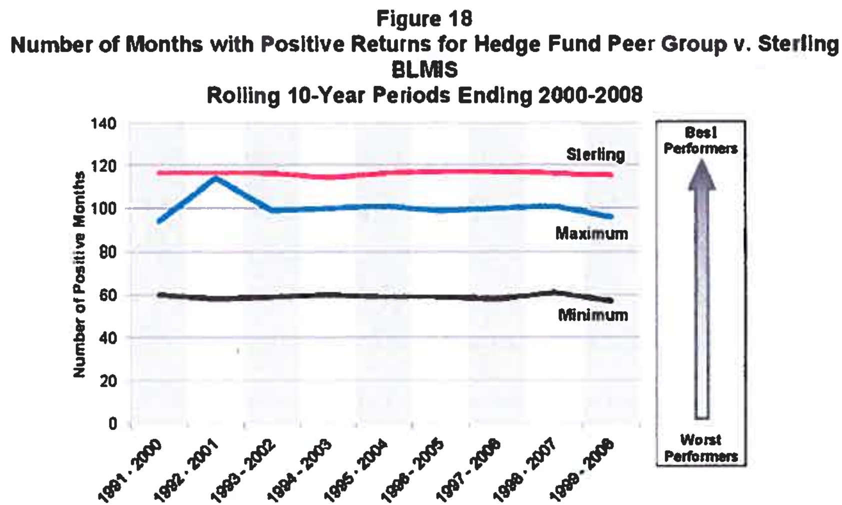
than their peers primarily because Sterling's BLMIS returns were rarely negative.

Figure 17
Sortino Ratio for Hedge Fund Peer Group v. Sterling BLMIS[216]
Rolling 10-Year Periods Ending 2000-2008



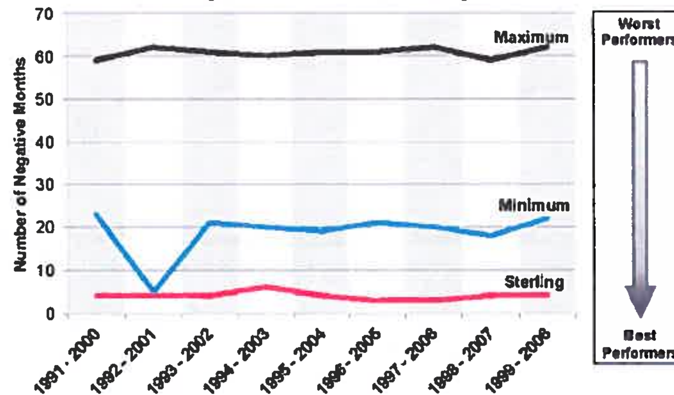
182. The figures below illustrate that Sterling's BLMIS returns were also outliers in terms of months with consistently positive returns and lack of months with negative months.

Figure 18
Number of Months with Positive Returns for Hedge Fund Peer Group v. Sterling BLMIS
Rolling 10-Year Periods Ending 2000-2008



216 2000 is the first year in which there is sufficient data available for a 10 year period. 2008 data is through November 2008. Sources include StorQM Customer Statements, Settled Cash table, BarclayHedge Database, Neue Privat Bank November 17, 2008, Federal Reserve FRB H.15 Release.

Figure 19
Number of Months with Negative Returns for Hedge Fund Peer Group v. Sterling BLMIS
Rolling 10-Year Periods Ending 2000-2008



183. It is clear from my evaluation of the above-presented metrics that Madoff-managed funds were significant outliers in the hedge fund world from 1991 through 2008. This was indicia of fraud and further evidence that Madoff was lying about his purported strategy.

b) Mutual Funds

184. Consistent with due diligence customs and practices I also considered a peer analysis using mutual funds that implemented investment strategies comparable to Madoff's purported SSC strategy. As part of quantitative due diligence it is common practice to review both hedge funds and mutual funds for investment strategies comparable to the target investment strategy. My analysis of mutual fund returns involves data obtained from Morningstar, a comprehensive mutual fund database.

185. Morningstar includes information on over 131,000 mutual funds,[217] and categorizes these mutual funds into 7 global asset strategies, with multiple subcategories for a total of 101

[217] http://corporate.morningstar.com/US/documents/Brochures/DirectProductBrochure.pdf (accessed on November 20, 2011).

possible strategies/categories.[218] Consistent with due diligence customs and practices I reviewed the categories used by Morningstar and identified those categories that included strategies that I considered most comparable to Madoff's purported SSC strategy. I identified one such category (the Hedge Fund sub-category within the Alternative global asset category), and all of the funds categorized by Morningstar as Hedge Fund were included in my peer group ("Mutual Fund Peer Group"). I note that Morningstar includes Gateway, a mutual fund implementing an SSC strategy, within the Hedge Fund category. Morningstar defines the Hedge Fund category as follows:

- Hedge Fund: Hedge fund portfolios engage in alternative strategies. Hedge fund portfolios can focus on specific areas of the market and/or specific trading strategies.[219]

186. Consistent with my evaluation of hedge funds, I assessed the Sharpe Ratio, Sortino Ratio, and number of months with positive and negative returns for the above-described set of mutual funds on a 10-year rolling basis. I evaluated mutual fund performance over the period January 1996 through November 2008. I first assembled the returns for all funds that reported monthly performance consistently from January 1996 through December 2005, which I refer to herein as the "2005 Rolling 10-Year Mutual Fund Peer Group."[220] I assembled analogous Rolling 10-Year Mutual Fund Peer Groups for 2006 through 2008. I evaluated each metric of interest over 10 years of returns data for each of the four Rolling 10-Year Mutual Fund Peer Groups. Again, the Sharpe and Sortino Ratios presented herein were calculated using returns data over 120 months.[221] The following figures illustrate the results of the Sharpe and Sortino Ratios (*see also* Appendix VII).

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[218] The number of subcategories per global asset category ranges from 1 to 48. *The Morningstar Global Category Classifications*, Morningstar Methodology Paper (March 31, 2010).

[219] *The Morningstar Global Category Classifications*, Morningstar Methodology Paper (March 31, 2010).

[220] This is the first ten-year period in the dataset with at least 30 funds. The peer group for this period includes 31 funds.

[221] Consistent with my hedge fund analysis, the metrics for my 2008 Rolling 10-Year Mutual Fund Peer Group are calculated over 119 months of returns data.

Figure 20
Sharpe Ratio for Mutual Fund Peer Group v. Sterling BLMIS[222]
Rolling 10-Year Periods Ending 2005-2008

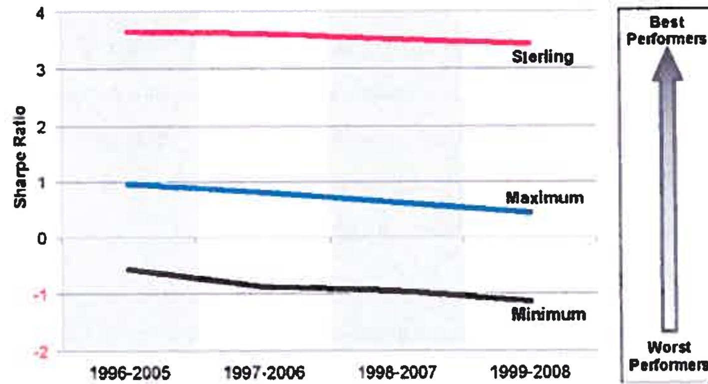
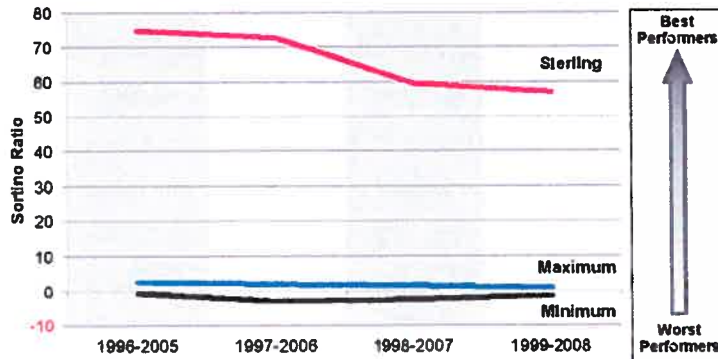


Figure 21
Sortino Ratio for Mutual Fund Peer Group v. Sterling BLMIS[223]
Rolling 10-Year Periods Ending 2005-2008



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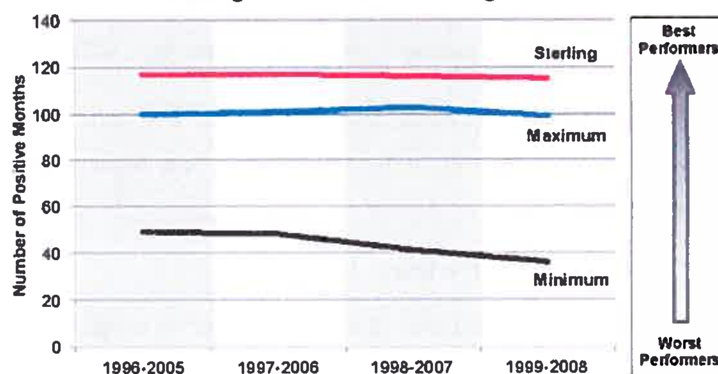
[222] 2005 is the first year in which there is sufficient data available for a ten-year period. 2008 data is through November 2008. Sources include StorQM Customer Statements, Settled Cash table, Morningstar Direct Database, Federal Reserve FRB H.15 Release.

[223] 2005 is the first year in which there is sufficient data available for a ten-year period. 2008 data is through November 2008. Sources include StorQM Customer Statements, Settled Cash table, Morningstar Direct Database, Federal Reserve FRB H.15 Release.

187. My findings based upon the 10-Year Rolling Mutual Fund Peer Groups are as compelling as those for the 10-Year Rolling Hedge Fund Peer Groups. Again, Sterling is an outlier in its risk-adjusted performance metrics, with its Sharpe Ratio and Sortino Ratio far exceeding the maximum of every other fund.

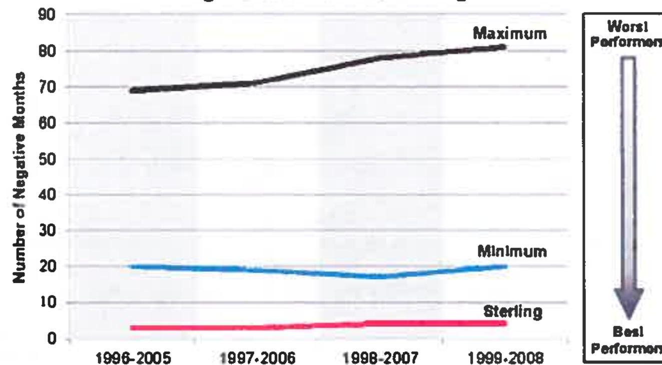
188. As the following figures illustrate, Sterling also posted far greater numbers of months with positive returns than the peers and far fewer negative months than the peers.

Figure 22
Number of Months with Positive Returns for Mutual Fund Peer Group v. Sterling BLMIS[224]
Rolling 10-Year Periods Ending 2005-2008



[224] 2005 is the first year in which there is sufficient data available for a ten-year period. 2008 data is through November 2008. Sources include StorQM Customer Statements, Settled Cash table, Morningstar Direct Database, Federal Reserve FRB H.15 Release.

Figure 23
Number of Months with Negative Returns for Mutual Fund Peer Group v. Sterling BLMIS[225]
Rolling 10-Year Periods Ending 2005-2008



189. In the context of relevant mutual funds, against the backdrop of basic investment management due diligence, Sterling's BLMIS performance is demonstrated to be a strong indicia of fraud.

c) Elite Investment Advisers

190. Sterling's Fred Wilpon stated that Madoff was "one of the top hedge fund investors in the world."[226] Therefore, in addition to the above analyses, I evaluated Sterling's BLMIS performance in the context of a number of distinguished or "elite" investment advisers to account for and analyze the notion that Madoff's performance could be explained by his "genius" or "elite" skills and abilities. These elite investment advisers, and the funds they manage, serve strictly as examples of possible performance benchmarks.

191. I assessed the Sharpe Ratio, Sortino Ratio, and percentage of months with negative and positive returns for a number of elite investment adviser over the period during which data was available. For example, Warren Buffet's performance (via Berkshire Hathaway, Inc.-

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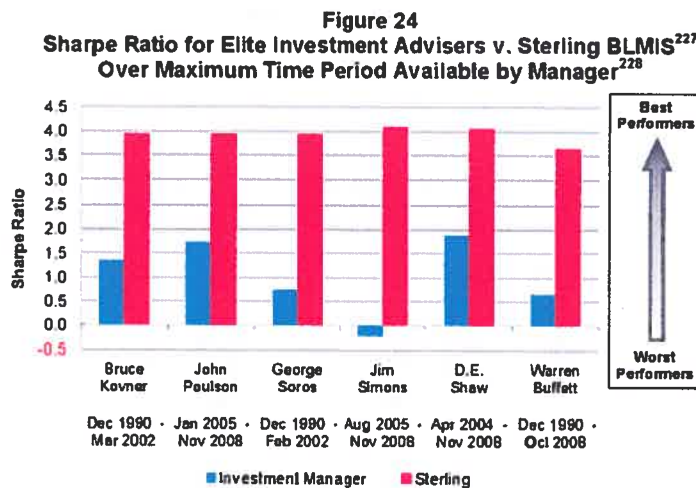
[225] 2005 is the first year in which there is sufficient data available for a ten-year period. 2008 data is through November 2008. Sources include StorQM Customer Statements, Settled Cash table, Morningstar Direct Database, Federal Reserve FRB H.15 Release.

[226] Fred Wilpon Dep. 144: 9-10, July 20, 2010; *See also* Chuchra Dep. 116, October 8, 2010 and Peter Stamos Dep. 146, August 19, 2010.

Class A) was compared to Sterling's BLMIS performance over the period December 1990 through October 2008. The other elite investors and funds also evaluated were George Soros (via Quantum Fund N.V. – A Shares), Jim Simons (via Renaissance Institutional Equities Fund, LLC – Series BB), John Paulson (via Paulson Partners Enhanced L.P.), Bruce Kovner (via GAMut Investments Inc.), and D.E. Shaw (via Oculus International Fund). Sterling's risk-adjusted performance dominates these elite investment advisers with respect to every considered performance metric. The figure below illustrates the comparison of Sharpe Ratios, Sortino Ratios, Percentage of Positive Months, and Percentage of Negative Months. The results are again red flags and indicia of fraud because of how consistent and significantly better they are than any other elite investment adviser over many years.

Figure 24
Sharpe Ratio for Elite Investment Advisers v. Sterling BLMIS[227]
Over Maximum Time Period Available by Manager[228]



227 Sources include StorQM Customer Statements, Settled Cash table, BarclayHedge Database, Neue Privat Bank November 17, 2008, Federal Reserve FRB H.15 Release, Bloomberg market data, Morningstar Direct Database. One fund was selected for each investment manager based on AUM and availability of data.

228 The time periods for each adviser are different because they reflect the time periods for which data was available. There are two reasons the time periods are not the same for every investment adviser. First, the investment advisers may have started their funds at different times. Second, the investment advisers may have only reported data to BarclayHedge in the time period indicated, regardless of whether they were operating a fund or not (i.e., they may have been operating a fund, but chose not to report their returns to BarclayHedge). Data for Warren Buffett is not based on BarclayHedge; it is based on the publicly-traded price of Berkshire Hathaway Common Stock.

Figure 25
Sortino Ratio for Elite Investment Advisers v. Sterling BLMIS
Over Maximum Time Period Available by Manager

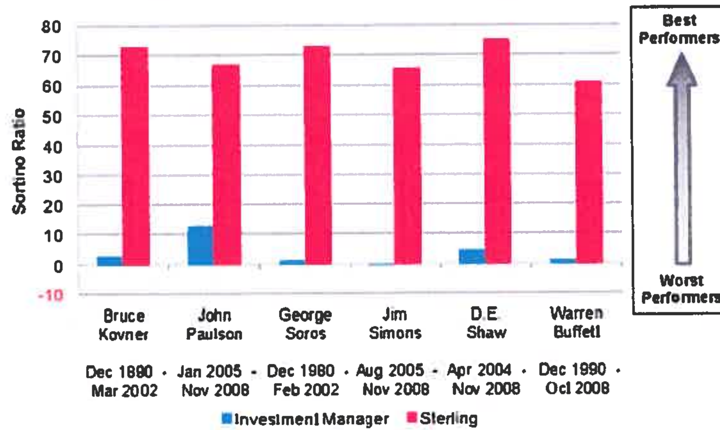
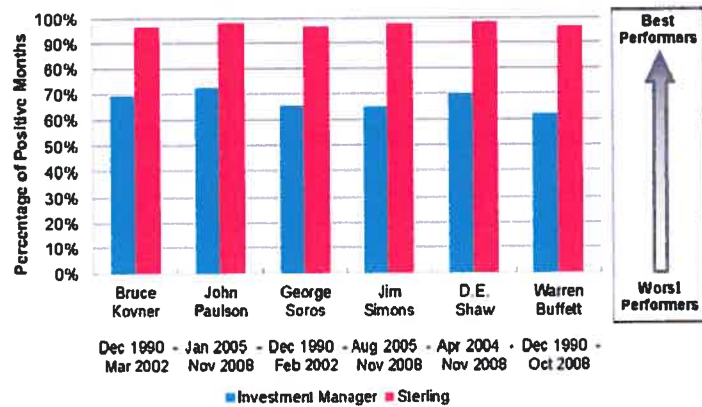


Figure 26
Percentage of Positive Months for Elite Investment Advisers v. Sterling BLMIS[229]
Over Maximum Time Period Available by Manager



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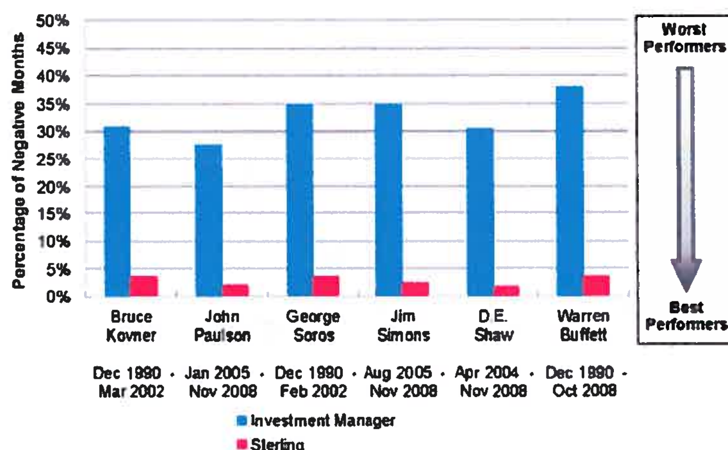
[229] The number of positive and negative months for elite investment advisers are shown as a percentage of total months given that the date periods differ for each adviser.

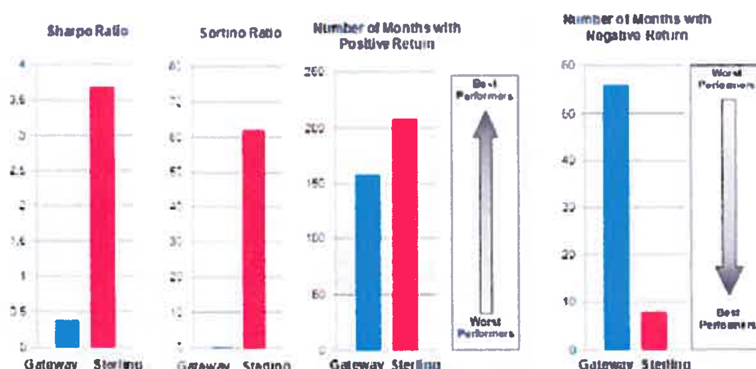
Figure 27
Percentage of Negative Months for Elite Investment Advisers v. Sterling BLMIS Over Maximum Time Period Available by Manager



d) Gateway

192. I also compared the performance of Gateway, a mutual fund that had many years of experience implementing a SSC strategy using stocks from the S&P 500, to Sterling's Madoff-generated returns. As with all other non Madoff-managed hedge funds, mutual funds, and elite investors, Sterling's BLMIS performance dominates Gateway with respect to every analyzed metric (*see* figure below). The fact that Sterling's BLMIS accounts were significantly and always outperforming a fund implementing a SSC by wide deviation was another warning sign that Madoff was not, and could not, actually be implementing a SSC strategy.

Figure 28
Sharpe, Sortino, Number of Positive and Negative Months for Gateway v. Sterling BLMIS



e) Market Indices

193. Finally, I evaluated Sterling's BLMIS performance in the context of a number of equity and bond market indices. While there are certainly examples of elite investors and highly-regarded funds that have produced risk-adjusted returns higher than the market over specific periods of time, it is virtually impossible that any given investor or fund could consistently generate risk-adjusted returns more than double market indices over approximately two decades.[230] Sterling's BLMIS metrics calculated over about two decades dwarfed those for a number of well-known equity and bond market indices (*see also* Appendix VIII).

2. Reverse Engineering

194. I also conducted an SSC strategy simulation to establish what any investor could have

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[230] *See, e.g.*, Vikas Agarwal & Narayan Y. Naik, *Multi-Period Performance Persistence Analysis of Hedge Funds*, Journal of Financial and Quantitative Analysis 327-42 (Issue 35, 2000); Ardian Harri & B. Wade Brorsen, *Performance Persistence and the Source of Returns for Hedge Funds*, Applied Financial Economics (2002), http://ssrn.com/abstract=318379 or doi:10.2139/ssrn.318379; and Samuel Manser & Markus M. Schmid, *The Performance Persistence of Equity Long/Short Hedge Funds* 51-69, Journal of Derivatives & Hedge Funds (Issue 15, 2009).

reasonably expected from Madoff's SSC strategy before investing any funds. The simulation incorporated S&P 100 index prices and the exchange-traded put and call options.[231] The simulation further assumed that the put strike was 1.5 percent out-of-the-money and that the call strike was 2 percent out-of-the-money.[232]

195. As discussed above in Section IX.B, one would expect *a priori* to see a strong correlation between Madoff's returns and the S&P 100 when the value of Madoff's basket of 40 stocks was between the put and call strike prices. Moreover, per the SSC simulation results, Madoff's SSC returns would have been expected to display a correlation coefficient of more than 0.86 from December 1990 through November 2008. However, Madoff's returns displayed a correlation coefficient of only 0.11 during that period. Had Sterling or a consultant run any basic simulation of Madoff's SSC strategy using even the most rudimentary assumptions, it would have been clear that Madoff's correlation with the S&P 100 was drastically less than the strategy would predict.[233]

3. Performance in Times of Market Stress

196. Another red flag that basic due diligence would have uncovered is Madoff's anomalous performance during times of market stress.[234] I identified a number of periods of market stress, based primarily on then current events, and compared the returns of the S&P 100

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[231] Madoff purchased baskets of about 40 stocks in the S&P 100 index; baskets which he claimed were on average 95% correlated with the S&P 100. Accordingly, the correlation coefficient derived from a simulation of the SSC strategy that incorporated Madoff's basket of 40 stocks rather than the entire S&P 100 would be substantially similar. David Basner Memo (November 25, 2005) (SSMSAA00052064). Sterling testified that Madoff used anywhere from 35 to 50 stocks in the baskets. Friedman Dep. 132, June 22, 2010. For simplicity, I adopt 40.

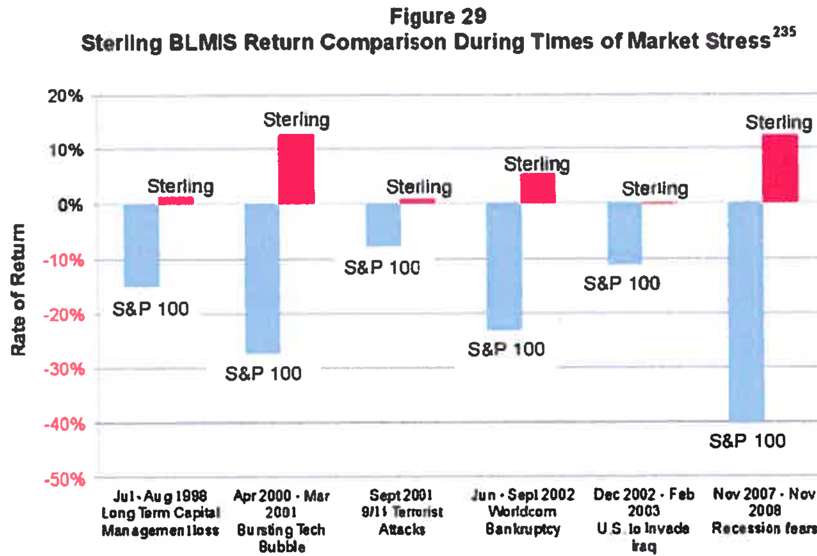
[232] It appears that BLMIS explained that put options were bought no more than 1.5 percent out-of-the-money, and call options were bought no more than 2 percent out-of-the-money. "Trading Authorization Directive" (June 20, 2006) (ELIP-BR00030707).

[233] Given how small Madoff's actual correlation with the S&P 100 was, I am comfortable that my conclusion is robust to any other set of reasonable assumptions (e.g., modeling Madoff's basket of 40 stocks rather than the S&P 100, incorporating different assumptions regarding the "out-of-the-moneyness" of the options allegedly transacted, assessing different time periods, etc.)

[234] The Kansas City Federal Reserve defines financial stress as "an interruption to the normal functioning of financial markets." Craig S. Hakkio & William R. Keeton, *Financial Stress: What Is It, How Can It Be Measured, and Why Does It Matter?*, Federal Reserve Bank of Kansas City (undated). I am using market stress consistent with this definition.

with the returns reflected on Sterling's statements. In each separate period, where the market exhibited significant stress, and the S&P 100 fell substantially, Sterling's BLMIS returns were inexplicably positive. The following figure highlights some of the periods of market stress where Sterling's BLMIS returns did not track the market:

Figure 29
Sterling BLMIS Return Comparison During Times of Market Stress[235]



197. The figure illustrates a number of examples where Madoff outperformed the market in times of stress. For example, during the Tech Bubble Burst of April 2000 through March 2001, Sterling's Madoff accounts generated returns of about 13 percent while the S&P 100 lost nearly 30 percent.[236] Similarly, Sterling's Madoff returns from November 2007 through November 2008 topped 10 percent, while the S&P 100 fell nearly 40 percent amid wide-spread fear of a financial crisis and extended recession.[237] Madoff emerged unscathed from several additional periods of market stress, including the terrorist attacks on the U.S. in September 2001, the aftermath of Worldcom's filing for Chapter 11

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[235] In the time periods shown, a month reflects the full month. For example, for the 9/11 Terrorist Attacks, the period of September 1, 2001 through September 30, 2001 was analyzed. Sources include StorQM Customer Statements, Settled Cash table and Bloomberg market data.

[236] StorQM Customer Statements, Settled Cash, Bloomberg market data.

[237] StorQM Customer Statements, Settled Cash, Bloomberg market data.

bankruptcy protection during the summer of 2002 (to date had been the largest bankruptcy ever filed), the U.S. invasion of Iraq during the winter of 2002-2003, and more recently (and most incredibly) the 2007/2008 recession.[238]

198. The fact that Madoff's risk adjusted returns were impervious to periods of tremendous market stress should have alerted Sterling that Madoff was absolutely not executing the stated strategy to achieve his consistent result.

4. Performance Attribution

199. One of the analyses that I performed (and that could have been performed based on the customer statements and trade confirmations received by investors such as Sterling) is called performance attribution. The purpose of this type of analysis is to identify the source of excess performance delivered by an investment adviser. It is important to note that while the cumulative red flags described at Section VIII should have prompted due diligence, institutional clients and high net worth clients, in my experience, often conduct performance attribution analyses on a regular basis in order to both to monitor the returns and to fully understand whether the performance was achieved in a method consistent with the stated investment styles.[239]

200. At the core of any investment process are the active decisions being made by the manager. The performance attribution below allocates the sources of return for Sterling BLMIS account profits into five major categories for the years 2000 through 2008, including: equity pricing, market timing, dividends, option pricing, and a residual amount that is

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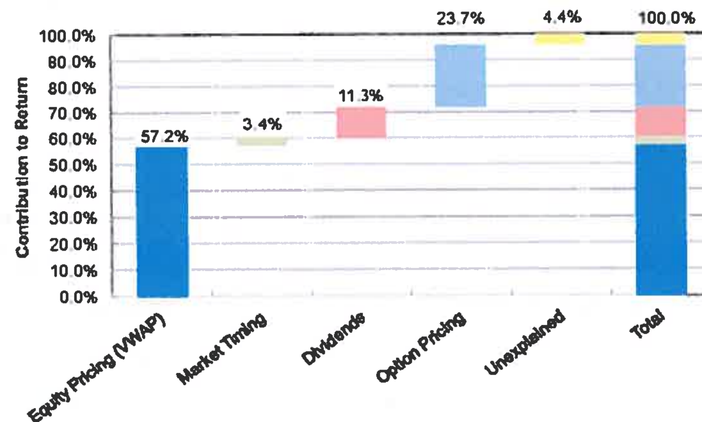
[238] StorQM Customer Statements, Settled Cash, Bloomberg market data.

[239] CFA 2011 Level III Program Curriculum, Vol. 6 at 185. Another key reason for performance attribution due diligence is to detect any changes in investment style that are inconsistent with the stated trading strategy. Any due diligence performed on BLMIS would have revealed that in fact on a number of occasions Madoff deviated from the investment strategy as it related to market timing. For example, an analysis of the purported holdings in the BLMIS accounts would have shown that frequently Madoff did not enter into the corresponding position for the call and put options at the same time as the underlying equity baskets. This led to times when the holdings in the accounts became over or under-hedged. Sources: Settled Cash table.

unexplained.[240]

Figure 30
Performance Attribution of Excess Returns 2000-2008[241]
Contribution of Major Categories to Sterling BLMIS Account Profit



201. As the figure illustrates, the single largest component of returns, more than 57 percent, comes from the alleged trade execution being above or below the Volume Weighted Average Price ("VWAP"). By consistently buying below VWAP and selling above VWAP, substantial excess returns are gained. Market timing, claimed as another possible source of performance by Madoff, is shown to actually contribute very little to the returns of the portfolio.[242]

202. In summary, this analysis indicates that the majority of Madoff's value as an active manager arises from his seemingly extraordinary and unbelievable trade executions. The fact that the majority of Sterling's BLMIS purported returns come from executing at

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[240] Equity allocation is based on trading acumen (trading above or below the average price); option pricing is based on trading acumen (trading above or below the average price); market timing is based on gains generated by when Madoff entered or exited the market; and dividends are gains made from holding stocks that paid dividends.

[241] Sources include Settled Cash table and Bloomberg market data. Excess Return is the return over and above the risk-free rate.

[242] Stamos Dep. 113-116, August 19, 2010; Gonder Memorandum (August 24, 1990) (STESAH0007079).

favorable prices relative to VWAP as opposed to market timing, was compelling, further indicia of fraud (in that BLMIS was not and could not have been doing what Madoff claimed to be doing).

203. In order to track trade execution effectiveness, it is common practice for portfolio managers to compare their transaction price against the VWAP for a relevant stock. VWAP is a trading metric calculated by weighting each transaction price by the volume for the transaction. VWAP data is easily obtainable from any Bloomberg terminal and was publicly accessible to investors like Sterling.

204. Comparing trading records in the 483 Sterling-related accounts against VWAP for the respective stocks over the period January 2000 to November 2008, 84.5 percent of purported buy transactions by share volume were executed below VWAP while 78.6 percent of purported sell transactions by share volume were executed above VWAP.[243] On average, Madoff bought shares $0.38 per share below VWAP, while he sold shares $0.29 per share above VWAP, which contributed to the significant gains created by trading above or below VWAP. These deviations from VWAP are significant in an industry where the industry norm is to target trade execution *at* VWAP (meaning that one would expect 50 percent of shares would be above VWAP and 50 percent would be below VWAP).

205. Not only was Madoff transacting at favorable prices, but also a large portion of the returns for Sterling's BLMIS accounts was due to the fact that the stocks were purchased at most favorable prices. As the following figure illustrates, in some years, Madoff bought below VWAP and sold above VWAP more than 90 percent of the time (*see also* Appendix X).

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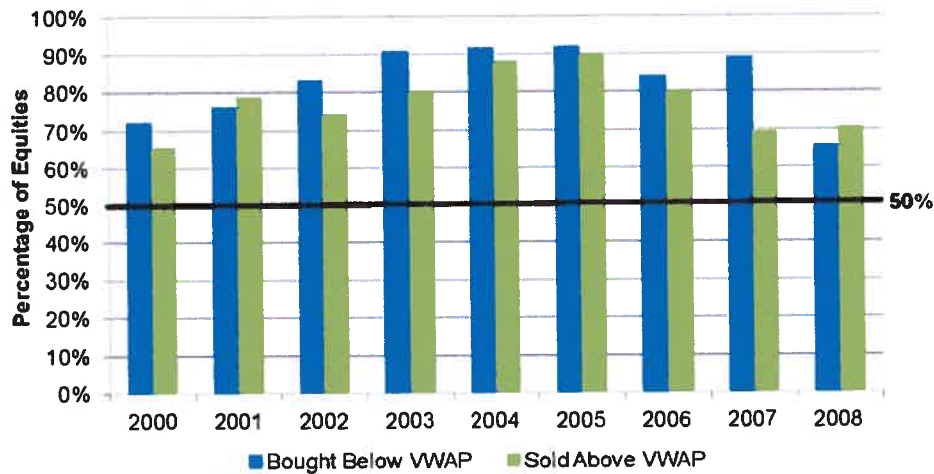
[243] This analysis was based on the Settled Cash table and market data from Bloomberg. Information in the Settled Cash table begins in February 1998. However, because the Settled Cash table contained incomplete data between 1998 and 1999 I was unable to perform this calculation back to 1998.

Figure 31
Sterling BLMIS Percentage of Shares Bought Below or Sold Above VWAP[244]



206. Given how many shares Madoff traded just on behalf of Sterling's accounts, the statistical probability of this happening is virtually zero percent. Buying below VWAP and selling above VWAP with the same success as Madoff is comparable to flipping a coin more than a billion times and getting heads 70-90 percent of the time.[245] It is virtually impossible to execute trades at these levels.[246]

E. Price

207. As discussed above in Section VIII.2, BLMIS's fee structure was highly atypical and far removed from industry customs and practices.

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[244] Sources include Settled Cash table and Bloomberg market data.

[245] There were over 500 million shares reportedly bought and over 500 million shares reportedly sold in Sterling's BLMIS accounts between 2000 and 2008.

[246] It is reasonable to assume that the likelihood of any share purchased below VWAP on any given day is 50%. The likelihood of buying 496 million shares below VWAP out of 587 million shares between 2000 and 2008 follows a binomial distribution. The calculated probability for this outcome is effectively 0.0%.

1. Madoff's Commissions

208. Madoff reportedly charged commissions of $0.04 per share for equities and $1.00 per contract for options.[247] These commissions can be visibly seen on customer statements after BLMIS registered as an RIA in September 2006. The charge of four cents per share for equities is rounded down to the dollar for each transaction and excludes shares in treasuries or money markets. Prior to September 2006, the commissions were reflected directly in the reported share prices.[248]

209. Applying this commission structure to trades in Sterling's BLMIS accounts, Sterling would have paid approximately $58 million in commissions to Madoff between 1996 and 2008, with average annual commissions during this period of approximately $4.5 million per year. This was significantly less than a comparable investment adviser would have charged had a more typical fee structure been in place.

2. Excess Fees under 1-and-20 Fee Structure

210. Had Sterling's BLMIS accounts had a typical "1-and-20" fee structure at the time, Sterling account holders would have paid annual management fees of one percent of assets under management and performance fees of twenty percent of annual net gains.

211. Assuming this fee structure, Sterling would have paid an average of $16.3 million in fees per year, totaling $212.4 million between 1996 and 2008.[249]

212. Sterling would have noticed that it was paying, on average, $11.9 million less per year under its existing commission structure than it would have paid under a typical 1-and-20 structure. The fact that Madoff willingly passed on $181.8 million in fees should have

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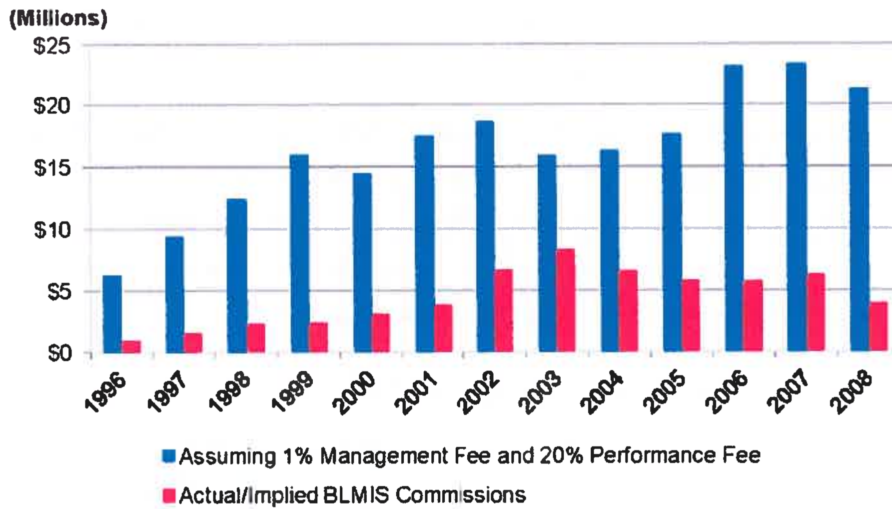
[247] Chachra Dep. Ex. 9 (November 28, 2005) (SSMSAA0052064); "Trading Authorization Directive" (June 20, 2006) (TLIP-BR00030707).

[248] While BLMIS did not explicitly identify commissions on customer statements, the only reasonable approach to identifying commissions would be to assume the fee was incorporated into the price prior to September 2006. After that date BLMIS explicitly reflected the commission on the customer statements.

[249] The time frame 1996 to 2008 is the only time frame for which I had data available to make this calculation. The value today of fees foregone in this time frame is greater than $212.4 million because Madoff would have been able to earn a return on these foregone fees.

indicated to Sterling that something was wrong with Madoff's operations and needed to be investigated. The following figure highlights the fees that Sterling could have been paying under a different fee structure.

Figure 32
Sterling BLMIS Fees: Actual v. Typical[250]



213. The fact that Madoff would pass on more than hundreds of millions of dollars in fees was a strong red flag that Madoff was lying about what he was doing.

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[250] With a traditional commingled fund structure, such as a mutual fund or hedge fund, many administrative and operational expenses would be paid for by fund assets. In the absence of such a structure those costs would have to be paid for by BLMIS out of the commissions being earned. Therefore, the true differential is even greater than represented in the figure. Sources include StorQM Customer Statements.

X. Conclusion

214. Based on my experience, industry customs and practices, my review of the documents in the record and my own analyses, there were numerous quantitative and qualitative red flags that were indicia of fraud. Due diligence in real time would have confirmed that Madoff was not legitimately engaged in his purported strategy, and was running a fraudulent investment advisory business.

Dr. Steve Pomerantz

November 22, 2011