

Exhibit 1

Part 6 of 6

Figure 20
Sharpe Ratio for Mutual Fund Peer Group v. Sterling BLMIS²²²
Rolling 10-Year Periods Ending 2005-2008

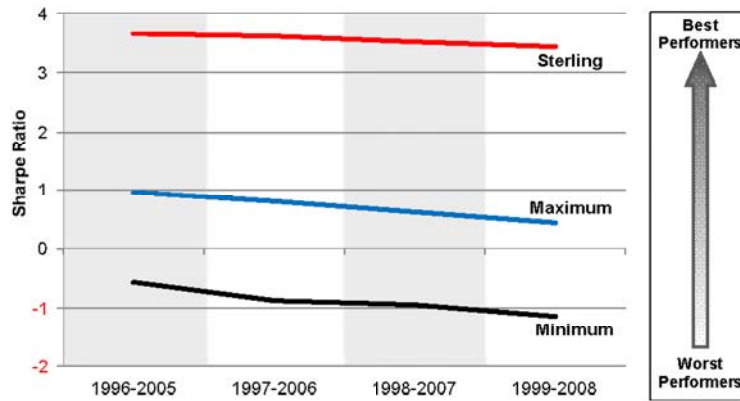
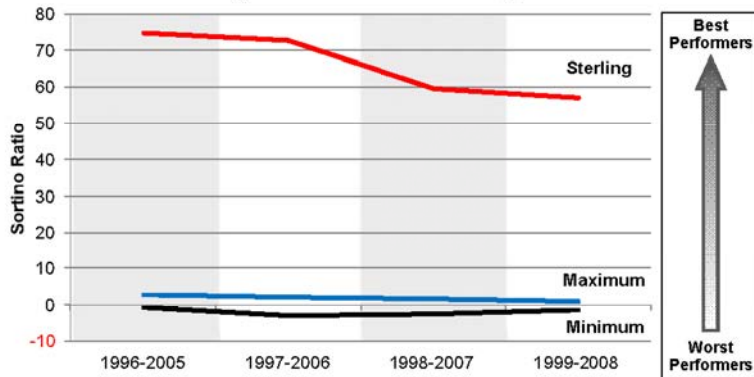


Figure 21
Sortino Ratio for Mutual Fund Peer Group v. Sterling BLMIS²²³
Rolling 10-Year Periods Ending 2005-2008



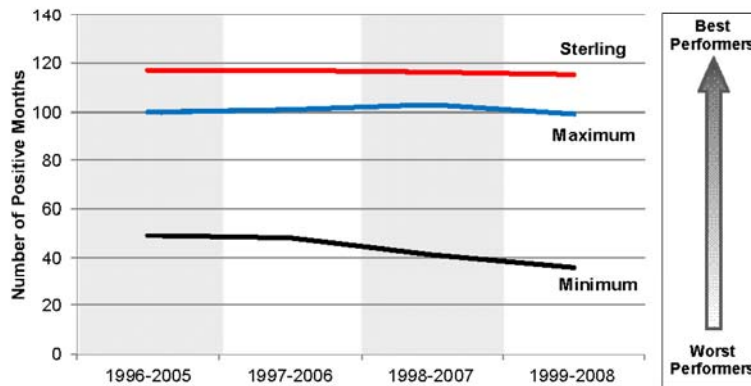
²²² 2005 is the first year in which there is sufficient data available for a ten-year period. 2008 data is through November 2008. Sources include StorQM Customer Statements, Settled Cash table, Morningstar Direct Database, Federal Reserve FRB H.15 Release.

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.

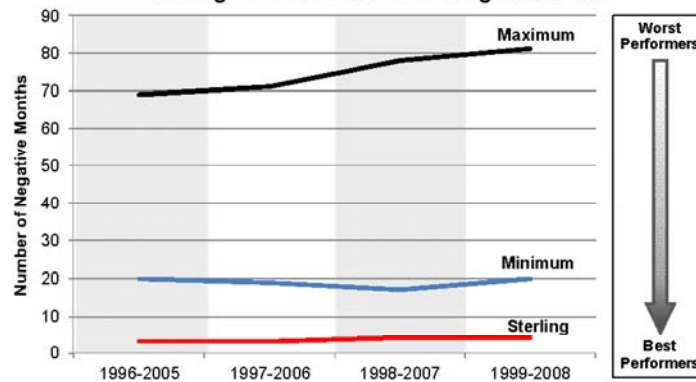
188. As the following figures illustrate, Sterling also posted far greater numbers of months with positive returns than the peers and far fewer negative months than the peers.

Figure 22
Number of Months with Positive Returns for Mutual Fund Peer Group v. Sterling
BLMIS²²⁴
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
BLMIS²²⁵
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

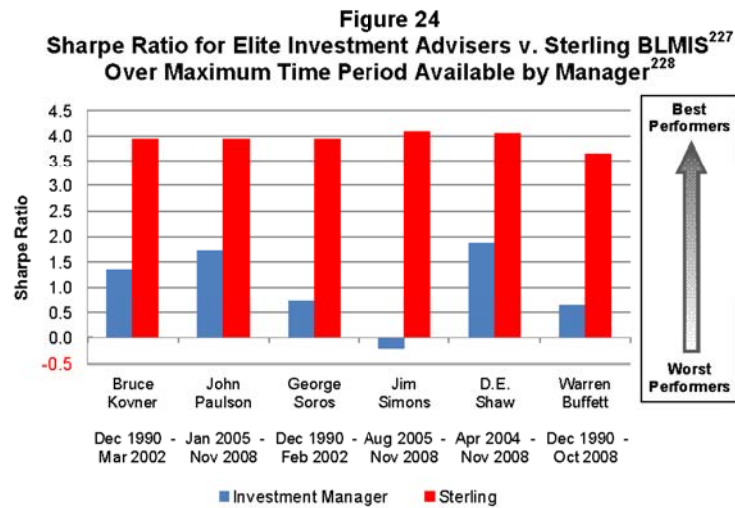
190. Sterling’s Fred Wilpon stated that Madoff was “one of the top hedge fund investors in the world.”²²⁶ Therefore, in addition to the above analyses, I evaluated Sterling’s BLMIS performance in the context of a number of distinguished or “elite” investment advisers to account for and analyze the notion 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.-

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* Chachra 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.



²²⁷ Sources include StorQM Customer Statements, Settled Cash table, BarclayHedge Database, Neuc 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

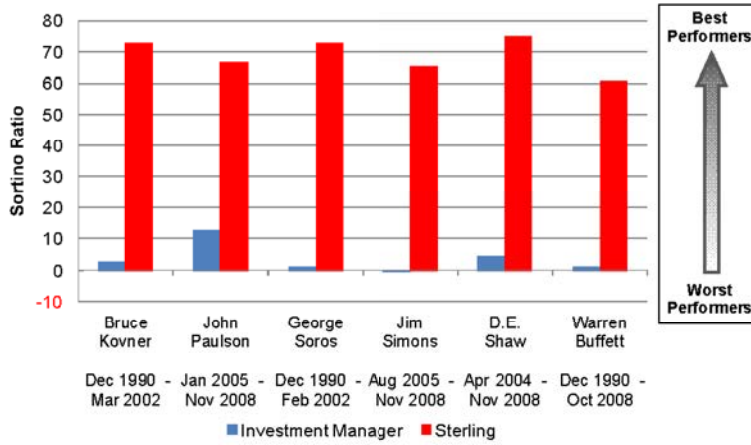
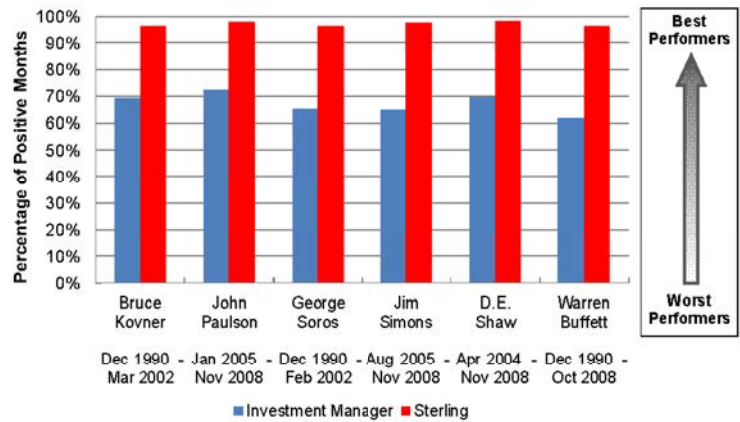
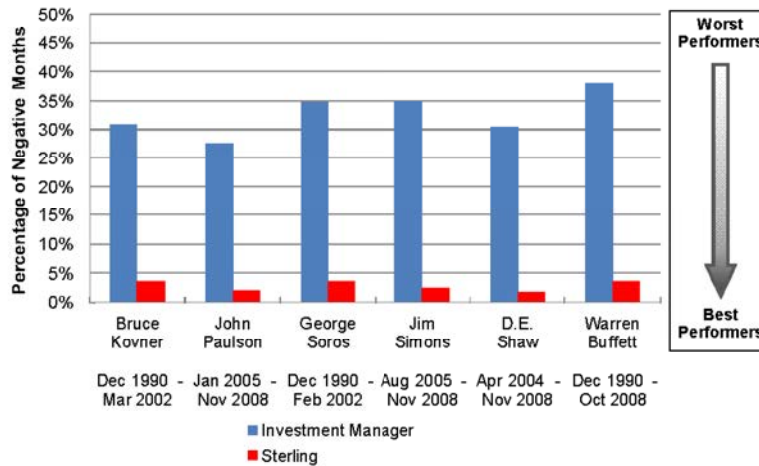


Figure 26
Percentage of Positive Months for Elite Investment Advisers v. Sterling BLMIS²²⁹
Over Maximum Time Period Available by Manager



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.

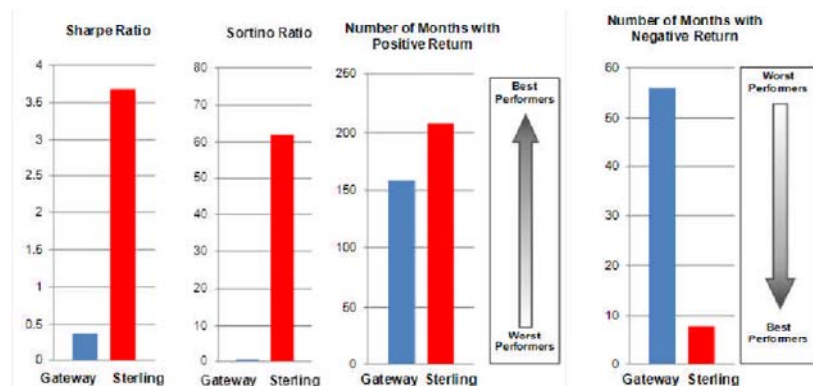
Figure 27
Percentage of Negative Months for Elite Investment Advisers v. Sterling BLMIS
Over Maximum Time Period Available by Manager



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

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

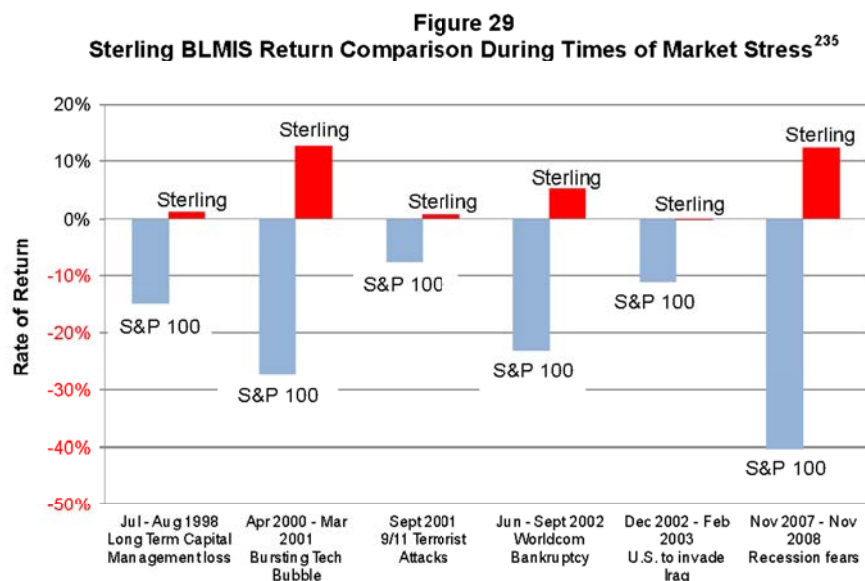
²³¹ Madoff purchased baskets of about 40 stocks in the S&P 100 index; baskets which he claimed were on average 95% correlated with the S&P 100. Accordingly, the correlation coefficient derived from a simulation of the SSC strategy that incorporated Madoff's basket of 40 stocks rather than the entire 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. Hakio & 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:



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

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

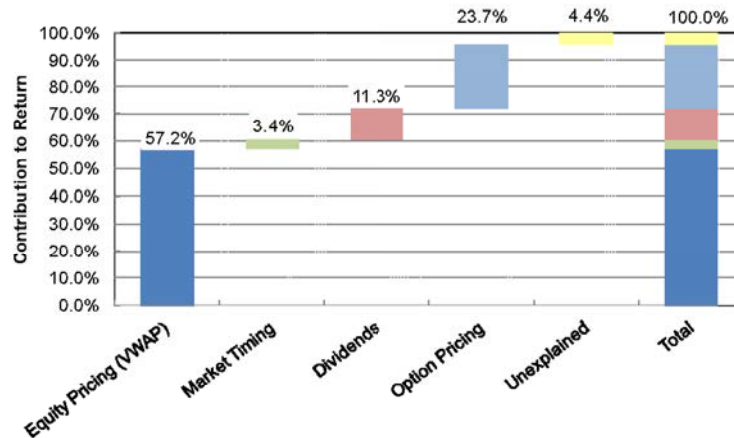
199. One of the analyses that I performed (and that could have been performed based on the customer statements and trade confirmations received by investors such as Sterling) is called performance attribution. The purpose of this type of analysis is to identify the source of excess performance delivered 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

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 2000-2008²⁴¹
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

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.

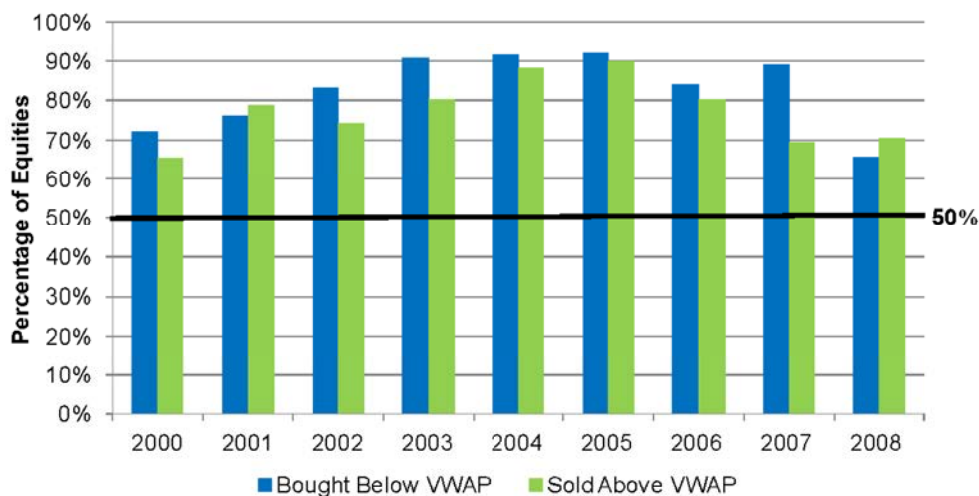
²⁴² Stamos Dep. 113-116, August 19, 2010; Gonder Memorandum (August 24, 1990) (STESAH0007079).

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).

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 VWAP²⁴⁴



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.

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

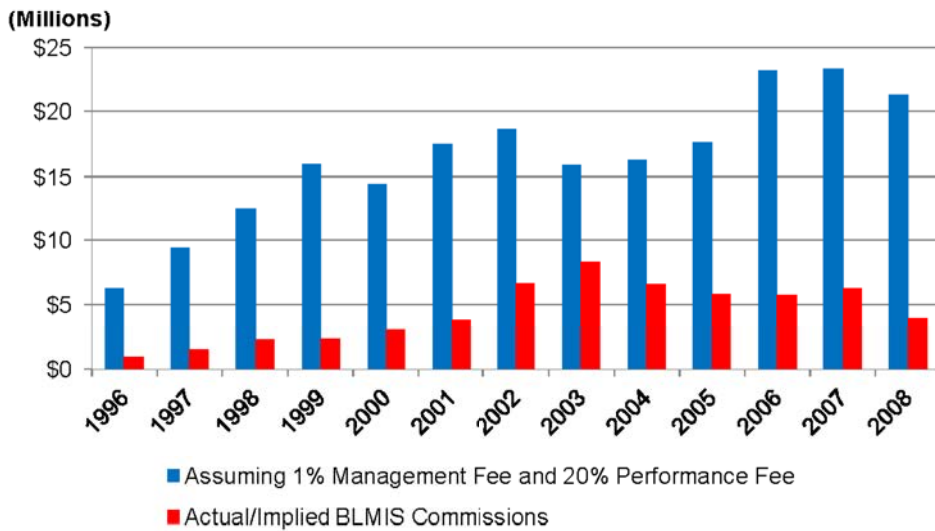
²⁴⁷ Chachra Dep. Ex. 9 (November 28, 2005) (SSMSAA0052064); "Trading Authorization Directive" (June 20, 2006) (ELIP-BR00030707).

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. Typical²⁵⁰



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.

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