What do Quants have to do with Bernard Madoff?

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The collapse of the phenomenal Ponzi scheme perpetrated by Bernard Madoff will hurt those who were gullible enough to trust him. It should be noted, however, that many investors were directed to Bernard Madoff Investment Securities by intermediaries – the so-called funds of hedge funds -- who now will have to answer for not doing proper due diligence on behalf of their clients.

The demise of Madoff showcases a fact about ``alternative investments'' that few are willing to admit. Investors and funds of hedge-funds, despite their claims to the contrary, often act superficially and fail to perform due diligence. This is due, in my opinion, to greed, to the pursuit of commissions, and, let's face it, to the uncanny ability of some smart operators to ``reverse engineer'' the investor's mind and tell them what they want to hear.

In 2004, I was working for the French hedge fund Capital Fund Management. My role was to advise on the development of a new hedge fund, based on trading equity option volatility using purely quantitative methods. The strategy consisted in investing in short-term option contracts on U.S. stocks (General Motors, Intel, and so forth), both buying and selling, so as to be ``market-neutral''. We bought and sold options based on whether statistically the option prices were deemed expensive or cheap with regards to their peers in their industry. It was – and still is – a relatively new idea, which was born in the world of option market-making.

Devising a purely quantitative version of this strategy was not easy. I worked with two physicist (Ph.D.'s) full time for a year to write the code, and also designed the order-management system for electronic trading and the risk-management system. We raised an initial capital of $15 million to start the fund. Despite the gyrations of the market in late 2004, which the rise of commodities markets, the U.S. election and other events of that year, the strategy was working (read: yielding modest positive returns) and we believed that it would be a good idea to raise additional capital with European investors. The new fund was ``my baby'' and I was excited to be able to turn years of research into an investment product.

This led to my first trip to Geneva, to visit potential clients and tell them about this new investment opportunity. Capital Fund Management was hoping to raise a moderate amount of money to grow the business `organically'' and impress our new investors with this high-tech product.

One of the potential clients that we visited was a venerable asset-management firm, well-known in Geneva circles. The professor found himself ``pitching'' the new fund to none other than Mr. E., one of the principals, over a cup of tea in a wood-paneled confence room in the City by the Lake. For me, this was an exciting moment – serious quants meeting serious investors.

In my presentation, I gave a description, in layman's terms, of what a ``volatility fund'' was. I stayed away from mathematical jargon, and did my best to cross that divide which existed between the ``lab rat'' that I was and the world of savvy Geneva investors. The latter, I was told were very sharp and could pick up any mistake immediately and make my trip to Geneva pointless (we did stay in a nice hotel by the lake, however, so tourism was made). I tried to be succinct and to the point. When my 15 minutes were up, Mr. E. said: ``We are not interested in investing with you. Your fund is too young, and we do not really understand what you do. We are very conservative here and we invest only in people with a stellar track record and in the top managers.'' I tried to hide my disappointment. Sales are sales and the customer knows best.

Then, before ending the interview, Mr. E. gave me some unsolicited advice. `` I see that you are interested in options investments. The only fund with options that we invest in is Bernard Madoff.'', he said. ``Bernard Madoff is a wizard. He uses a strategy of buying put options in the Standard and Poor's 500 Index and selling calls. Then, he buys stocks which he carefully selects. This mixture produces very stable returns and is one of the best strategies that we know with options, and the only one that we would invest in.''

I was intrigued. How come we never heard of Madoff? Fifteen years of theory at NYU, five years spent in New York trading floors, careful studies of the relative value of option contracts across thousands of stocks, and someone with a simple ``vertical spread'' in indexes was consistently beating the market? How does he do it? E. replied; ``We don't know, really. But it works. If you can find out what he does, or do something similar, you will be very successful. Half of Geneva's asset management companies are invested with Madoff.''

Returning to Paris with CFM's boss, we discussed the interview and the mysterious Madoff fund. How come I didn't discover something like that? By looking at the math (trees), I had missed the profitable trades (forest)! Back at my desk the next day, I tried to discover the magic of the S&P options spread applied to various stock-picking and futures strategies. I worked hard trying to find out how the magic of using S&P options would diminish risk and enhance returns. The math just wouldn't oblige.

As hard as I tried – and, believe me, I tried -- I could not find anything of value. The mathematician was trumped. My boss was disappointed, and in a few days I was back to my old tricks, obsessed with number crunching, juggling the Greeks (as in Delta, Gamma, Vega, Theta and other Black Scholes sensitivities), looking for that sweet spot, or arbitrage, in the options markets.

Since then, I left CFM and went to other funds and then back to teaching. I never lost interest in options and still run my own portfolio. But that afternoon in Geneva always stayed on my mind – the gray sky over Lake Leman, the steaming hot tea brought by a nice Swiss lady, the venerable Mr. E., and that unbeatable Madoff.