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The Robots Can't Stop Us Repeating the Mistakes of 2008

A Q&A with Robert Frey, a former managing director at Renaissance Technologies.

Big Data, machine learning and artificial intelligence are all being touted as the saviors of active fund managers in their battle the rise of low-cost passive funds. A veteran of the hedge-fund industry's efforts to corral quantitative processes into money-making machines is skeptical that the reality will match the hype.

After working at Morgan Stanley in the 1980s and a stint running his own fund, Robert Frey joined the legendary quantitative hedge fund Renaissance Technologies LLC in 1992. Partnering with founder Jim Simons, Frey spent more than a decade there as a managing director helping to build what Bloomberg News in 2016 called "perhaps the world's greatest moneymaking machine." The firm's Medallion Fund generated annualized returns of almost 80 percent a year before fees.

In 2004 he quit to become a professor at Stony Brook University, establishing a program in quantitative finance. In 2009, he started a fund-of-funds business called Frey Quantitative Strategies managing a mix of his own money and that of external investors. The firm, which oversees about \$120 million, uses statistical tools to screen hedge-fund managers in an effort to distinguish between those that are generating alpha and those whose returns are just driven by trends in the broader economy and markets.

I caught up with Frey by telephone from Port Jefferson, New York, a few weeks ago. Here's a lightly edited transcript of our conversation.

MARK GILBERT: How do you see the asset management industry changing in, say, the next five years, given the current emphasis on big data, machine learning and artificial intelligence?

ROBERT FREY: Anytime you have a new technology you have an initial period of people realizing there's some meat on that bone, you can maybe make yourself a little more competitive, but then it tends to get oversold. Everybody figures this is going to be the magic potion that's going to cure everything. People get into it not really understanding it, then it loses some of its luster and it collapses. Then it gradually comes back and the industry matures to use these techniques. We're not quite in the oversold category yet, but it is coming.

Investment managers are going to have to start using these techniques if they want to stay competitive. An investment manager's main job is to make decisions on behalf of clients in those clients' interests. At a minimum, managers have to decide what these techniques can and can't do.

There is significant promise in these new techniques, but it's important to understand these things have been around for a long time. When we talk about things like artificial intelligence, the emphasis is on the artificial, not on the intelligence. These things in no way represent a reasoning process; they're basically model-fitting techniques. They can be very powerful, but they can be misused. You have to take the time to understand the underlying technology.

MG: Is there a danger of people building black boxes without understanding how the technology is delivering its results?

RF: There is a significant risk of that. At the beginning of the over-adoption or oversold phase, too many people are saying that they're AI experts or machine-learning experts, when all they are is people who have learned how to use a particular software library. There are these tools out there, but finding the best solution to a problem requires a certain amount of tender loving care, where you're coding it out in a deep way, tweaking the strategy, using a hybrid approach which combines multiple strategies. That depends on really understanding what's happening inside the box.

MG: How can investors guard against low quality data sets?

RF: That's been a problem with finance since the beginning. We look for parsimony; we don't want it too simple, but we don't want to have extensive complexity because of the risks of overfitting. People don't spend enough time thinking about these problems, they just want to rush it through some cool new piece of software, they check against some sort of goodness-of-fit test, and they say this is wonderful. This isn't a new problem; in 30-plus years in the hedge-fund industry, I've never seen anybody present me with a pro-forma strategy that lost money. In reality, most funds don't make money.

MG: What percentage of the asset managers you screen are genuinely able to generate alpha?

RF: It's rare. I would say 10 to 15 percent would be pushing it, and in that 10 to 15 percent, a fair number are able to produce some alpha, but not enough that you'd be really excited about investing with them. In any strategy, because it's driven by certain external economic factors, it's not unreasonable for it to go through periods when it doesn't look so wonderful.

But what happens is managers sometimes panic and they violate their own internal risk regiments, and that's really serious. People who have a successful operation and regimen that they are following sometimes they go off the reservation because they are trying to make up for their losses. That's something we look for very carefully. To detect that, you look at volatility and how that's trending. When we see someone's volatility creeping up over levels that we had before, we become very concerned. Sometimes we've gotten out of funds simply because of second-order effects, because of what we see on the volatility side, even though the returns haven't yet shown a problem. Very often we've been right.

MG: How long do you give an underperforming fund manager?

RF: A lot depends on individual circumstances. It's like asking a doctor how long do you keep a patient in the hospital; some people are treated on an outpatient basis, some people are going to be in there for six months. It's the same thing with a fund. It just depends on the diagnosis.

As long as the fund manager isn't doing something against his or her own risk protocols, which we've investigated and accepted, we're willing to hang in for a fairly long amount of time as long as we understand what's going on. It's when somebody's losing money and we don't know why they're losing money -- why all of a sudden their alpha has collapsed and their volatility has gone up -- that's when we move really fast to get out.

MG: I watched [a video of a presentation you gave in 2015](#) about the lack of volatility in the run up to the 2008 financial crisis encouraging investors to increase their leverage. Do you see parallels with the current market environment?

RF: Yes, I do. People tend to be myopic. They'll have something like a Gaussian model and they'll use that to forecast volatility. But financial markets are like weather systems. There are distinct regimes that they go through. So just the same way I might analyse wind patterns, I also have to be aware that a hurricane is going to blow through every 15 years or so. If I'm building a house ignoring that fact, I'm going to be in trouble. The problem is people look at the low volatility today, and low volatility tends to mean low returns, so they start to leverage up, they take more risky bets, and they justify it by saying "well, look at how low volatility is." But what do you do when something like 2008 hits? That's the equivalent of a hurricane coming through.

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People tend to be myopic, and that brings some very dangerous behaviors. Unfortunately we're starting to see that again, with a lot of people seeming to be of the opinion that the stock market can't go down.

MG: Is it getting harder to generate alpha?

RF: Absolutely. It's certainly gotten a lot harder as more people know what opportunities exist. As the economy grows, maybe the opportunities grow, but the number of people out there looking for those opportunities is growing faster. So it is certainly harder to generate alpha.

MG: So are we getting closer to an efficient market that will make alpha impossible to generate?

RF: The market isn't some static thing that just sits there; the very act of exploiting something changes the market. I don't know that we'll ever find a situation in which we'll have something akin to pure efficiency. I'm not sure even what that means. You assume everybody has zero trading costs, infinite liquidity and perfect information. It's kind of silly. I don't think markets can become efficient in the classical sense. It's going to be harder to distinguish oneself in the markets -- but that's not a bad thing.