



## Risk Management or Risk Manipulation

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Value at risk (VaR) financial models are the latest game being played by those on Wall Street who profess to manage risk, a troubling trend detailed superbly by Joe Nocera in a January 2<sup>nd</sup> New York Times Magazine [article](#). They give bankers a false sense of confidence in their risk control while, in reality, they increase the level of risk for society as a whole.

But Nocera understates the problem. The risk management groups on Wall Street are actually engaging in risk manipulation, risk distortion, and risk amplification — anything but risk management.

Public perception is that Wall Street didn't do much risk management over the past decade, or perhaps longer, resulting in the profound credit crisis that wiped out many financial firms and left others precariously hanging on. But the problem is not that Wall Street didn't have people monitoring risk. Almost every firm hired scores of risk managers during the last several years, with some being paid millions of dollars a year. The problem was that the more people they hired and the more VaR financial models they ran, the worse their understanding and assessment of risk became.

Why so? There are two main reasons. First, the structure of VaR models is not based in reality. They place too much faith in the fantasy of mathematical algorithms to explain the behavior of human beings. They assume human behavior can be modeled as accurately as launching a rocket — that we can predict its path and outcome 100% correctly. It's no coincidence risk managers are often called rocket scientists — they treat people like physical objects. Is human behavior really that predictable? Are risk managers so crazy as to think human beings behave like a mindless, computer predefined rocket? Does human behavior obey math principles or is it the other way around?



Most financial models rely on theories of probability and statistics. In modern physics, quantum mechanics relies heavily on statistics as a way to explain cause and effect. But the financial world is no science experiment; everything is for real. You can never go back to do it “right” and repeat an “experiment.” Things might work one time but may not work the next time. When a physics-like approach is applied to financial products whose value is heavily tied to human actions, like mortgage prepayments, it becomes a computer game of garbage in and garbage out.

Or worse, it becomes a self-fulfilling prophecy. As risk managers used financial models to come up with VaR for toxic products, iterating to arrive at what they believed were successively more accurate estimates, they developed a false sense that they were actually in control. They believed they could accurately predict every possible cash flow scenario for a mortgage-backed security, as well as its probability distribution. The CDOs and the credit default swaps created through this process embedded a level of overconfidence which killed the whole industry. You can always fool many people for a long time, especially when you become a fool yourself.

For a time the VaR model seemed to “work,” but it failed exactly when it was needed the most. As hedge fund manager David Einhorn said in Nocera’s article, VaR is “relatively useless as a risk-management tool and potentially catastrophic.” Why so? Because we will never be able to understand and assess the true nature of supposedly rare catastrophic events. Statistically this is the “fat tail,” an event which happens a lot more often than we perceive and put into VaR models. Second, when it happens, its consequences are catastrophic, potentially putting everyone out of business. Computer models cannot handle this kind of discontinuity, which is a little like a number divided by zero. As Nicolas Nassim Taleb said in the article, “In the real world, the magnitude of errors is much less known.” If you don’t know the true probability and potential damage, you might as well throw the whole VaR model into garbage. To instead use it to manage risk is absurd.

But it is worse than Nocera described. The second reason for the failure of risk management is that financial models were all based on assumptions. It was too easy to twist a few of them to produce the desired outcome. Risk managers felt they are infallible, to the point of feeling like Gods. They justified any rating for their CDOs or predicted any MBS default probability and payment schedule they wanted. If too much risk was calculated by the model, no problem, they just twisted a few assumptions in the Monte-Carlo simulation of the VaR model and then re-ran it. Suddenly the distribution graph showed the exact curve they needed. This transformed a game of false but honest assumptions into much more insidious risk cover-up.



Most of the time common sense dictates whether you are adding or reducing risk, without even running any models. For example, when a former high level executive of Citigroup pushed the firm to get into the exotic derivative areas of MBS, CDOs and CDSs, even naïve observer knew Citigroup was adding risk to its portfolio. But by using some “magic” financial models, the risk management group and their “renowned” consultants were able to show the Board of Directors that Citigroup was not taking any more additional risk and, even if it was, it could be diversified away through their global supermarket portfolio. Risk managers twisted the model to produce the desired future outcome, and they used financial models to justify a huge amount of risk that has since wiped out their shareholder value many times over. In another example, after AIG repeatedly assured investors there was no risk at all from their CDS portfolio, with a risk model to back up their counterintuitive assertion, a very small financial product group ultimately wiped out the financial conglomerate.

The seductive elegance, overconfidence and abuse inherent in financial modeling are at least part of the reason for the current credit crisis. The more risk managers hired on Wall Street in the years running up to the crisis, the riskier the firm proved to be. Just look at Citigroup. How many of its employees and consultants have been, and are still, doing risk management one way or another? When top management relentlessly pursues quick profits by taking on more risk, risk managers become puppies. Eager to please their managers, they use their expertise to cover up risk rather than expose it. Computer models become their prime weapon.

Outside of risk management, financial modeling is also heavily used in portfolio return analysis and forecasting. For most of the last ten years of the Greenspan era, a big myth — or “theory” — was that low cost of capital (which Greenspan achieved by relentlessly driving down interest rates) would lead to improved return on equity (ROE). Many people used financial models to justify or “predict” a value for the Dow of 36,000 or even 100,000, a so-called paradigm shift of ROE. Suddenly companies got all the free capital they wanted, leveraging their ROE (ROE is a leveraged factor in the capital structure). The sky was the limit for the return to shareholders and for their stock prices. And it was supposed to go on forever. No longer human beings living on Earth, investors became in their own minds powerful angels who could do no wrong, led by the maestro Greenspan. When too many people (and their computer models) told the same lie, the lie itself became the truth. How could Greenspan and so many other very smart people suddenly forget the very basic economic rule that low cost of capital will eventually lead to zero return on equity? That is a fundamental principle of capitalism.



Another myth of the last decade was that using financial models in dynamic asset allocations could improve performance. The Yale and Harvard endowment funds used dynamic asset allocation to invest in private equities, hedge funds, real estate and timber. Other endowments followed their lead to “diversify” and “rebalance” their portfolio whenever dictated by their computer models. But they failed to realize that most of those assets are illiquid, and when everyone is dumping them at the same time, it is a downward spiral or worse, and there may be no way out. Computers are notoriously bad at modeling liquidity. This was a critical lesson of the program trading and dynamic hedging that caused the 1987 Black Monday market crash. As Jeremy Grantham of GMO has said, in the long run, human beings learn nothing from history, and 1987 is just two decades ago.

In a certain sense, the liquidity crisis of the last six months was inevitable. Wall Street got complacent with computer models, and nature came back to punish them (and the rest of us) for shrugging off the resistance to modeling of a key factor: liquidity. Computer models depend on the assumption of a continuous market, with a balanced equilibrium between buyers and sellers. A situation where all the liquidity is sucked out of the market destroys the value of all those exotic paper products. We do not need a bunch of highly paid math geeks to run millions of Monte-Carlo simulations to tell us that. A computer can never replace common sense.

Now we have another Fed Chairman who only knows how to print more money, then print some more, and expand the Fed’s balance sheet ever-wider. Bernanke drops the money at only one location, Wall Street. Being an economist and renowned monetarist, he must know that excessive printing will eventually lead to zero value of the fiat currency, the US dollar, just as low cost of capital eventually leads to zero ROE. If that is the inevitable outcome, the government should drop money to the middle class and the poor, not the super-rich bankers on Wall Street. Since ten times zero is still zero, what difference does it make? In addition to being a politically popular move, this might even avoid a few incidents of social unrest.

So-called “extreme” events with “low” probability happen more often than people perceive in risk management. When they occur, an unforeseen tsunami of incalculable magnitude results, destroying wealth on a scale from which it may take a generation or two for the economy to fully recover. Meanwhile, you can pretty much throw risk management out the window. It does more harm than good.

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