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Living with Actuarial Black Swans—a Discussion with Nassim Nicholas Taleb

By Ben Wadsley

■ may be killed crossing the street; should I not cross? Taleb's answer is, "Do not cross the street blindfolded!"

At the 2009 SOA Annual Meeting in Boston, Nassim Nicholas Taleb shared some thoughts on Black Swans, operating in the fourth quadrant, and living in the world of Extremistan versus Mediocristan during his keynote speech, all of which can be found in his published work. The follow-up session, summarized here, was our chance to ask the real question: What do we actuaries do about these phenomena?

The panel discussion was jointly sponsored by the Financial Reporting, Investment, and Forecasting and Futurism Sections and featured presenters Steve Conwill, FSA, MAAA, Max Rudolph, FSA, CERA, MAAA, and John Tiller, FSA, CERA, MAAA, respectively. The session was moderated by Alan Mills, FSA, ND. Look for other great sessions from these three sections at the 2010 SOA Annual Meeting in New York. The panelists asked several questions from their respective actuarial fields' point of view, and there were three recurring topics from Mr. Taleb's responses that are summarized below: Disclosure, Stress Testing, and Globalization.

DISCLOSURE

In 2003, Taleb was quoted in *The New York Times* saying that Fannie Mae will go bust. A disgruntled former employee of Fannie Mae had provided a copy of an undisclosed risk management report to a *Times* journalist. The journalist took it to Taleb, who was a professor at NYU, for interpretation, leading to Taleb's prediction. Fannie Mae had this risk report, but without disclosure the investors of the company and the media were not aware of the issues, thus they were not required to act on the results.



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Are banks today marking-to-market their loans? No. In derivative trading where mark-to-market is used, every morning you start fresh. This avoids anchoring bias, which is the human tendency to rely too heavily on one piece of information when making decisions. In contrast, banks keep their loans at full value, even when payments are past due—the banks are anchored to the book value of the loan. The solution to this problem is to use mark-to-market reporting and have volatility instead of having nothing and then experiencing a Black Swan event.

Taleb went as far as to say the banks should stop hounding customers with late payment notices, realize the loss, and renegotiate the loans. This viewpoint may be a bit extreme, but the point he was stressing was that forcing mark-to-market should be extended past where it is being used today. A natural response to forcing banks to mark-to-market is the concern that it would cause unnecessary panic to shareholders. In the age of the Internet and the 24-hour news cycle, rumors spread quickly. Instead of mitigating rumors, be



robust to the rumors. This means that we should have more transparency through risk reporting and valuation so rumors won't have a chance to impact our business. With full disclosure, we can create robustness that will mitigate fragilities inherent in our complex economic systems. Disclosure won't directly make banks robust, but it will force banks to deal with issues immediately and directly which will make them more robust. According to Taleb, mark-to-market in hedge funds may "... make them seem more volatile, because everything is volatile. It's sort of like someone seems sicker because you take their temperature."

STRESS TESTING

To get real risk management value out of stress testing, extreme scenarios must be used. Smaller levels of shocks may not give us the true level of risk in an entity—which doesn't get us to the goal of stress testing—to measure a company's relative fragility and robustness.

Let us consider two portfolios. The first contains 95 percent Treasuries and 5 percent high risk securities. The second portfolio contains senior notes of a fully capitalized synthetic CDO. If only a moderate shock is used—as in early 2009 when banks were forced to stress test their business with an unemployment rate of 10.3 percent, which Taleb claimed was only a blink away from happening—the first portfolio may lose most of the value of the high risk securities, while the value of the second portfolio may hardly move. This would show that the first portfolio is riskier, when it is clear that it is not. A good stress test would have shown the robustness of the first portfolio (complete loss of the risky securities, but the Treasuries remained untouched) while the second portfolio would show much greater losses, revealing the fragility of the assets, thus filling the tail of the loss distribution.

It may be conceptually difficult to choose a stress test level greater than a historic high, but no largest historical high has a predecessor—World War I and 9/11 were many times larger events than any previous event.

GLOBALIZATION

The world is moving towards the interdependence and connectivity of a globalized world. In just the last year we have been presented with new challenges and have had to deal with terms like "too big to fail." One large loss that Taleb attributed to the impact of globalization was the 2008 Societe Generale loss of \$7 billion caused by a rogue trader. The single rogue trader was hiding a \$75 billion risk position, and the loss occurred when these contracts were unwound at fire-sale prices. Rogue traders cannot be prevented, but we shouldn't have a bank big enough to be able to take on that big of a risk position because of the nonlinearity in the risk taking ability of banks relative to their size. Taleb asked us to consider a thought experiment—if instead of one large bank with one rogue trader and a \$75 billion

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risk position, there were 10 smaller banks with 10 rogue traders and a \$7.5 billion risk position each. While a sales order of \$75 billion caused a market movement of several percent, an order of \$7.5 billion would only take two phone calls and would hardly cost anything on a liquid day. Taleb's prediction was that the loss may have been only \$1 billion if the losses were spread across these 10 smaller banks.

Does Mother Nature already know this phenomenon? Perhaps the reason that we don't have a land animal bigger than an elephant is the inability of a large animal to survive Black Swans. In the case of an extreme drought, large animals requiring a large amount of water per day will die, while some—but not all—smaller animals requiring

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less water will survive. This pronounced contagion effect applies to viruses as well. The unnecessary global travel that we do would increase the impact of a flu pandemic. When asked about the possibility of a flu pandemic, Taleb predicted that there is a “95% probability it will happen in my lifetime,” and since there is a high probability that it will kill him, he is going to hurry and finish his next book, *Tinkering*.

Today’s use of the Internet also redefines the “run on the bank” scenario. There was a value to the bank of having people stand in line to withdraw their money. In a modern-day equivalent scenario, everyone would have their transactions completed on their Blackberrys in minutes.

The combination of increased flu pandemic contagion effect and our financial interdependence makes it difficult to protect our businesses. Without dividing into smaller financial entities or subcontracting our risk-taking and reducing our global travel, Taleb points out that we are forced into buying “... insurance on the Titanic from a guy on the Titanic.”

CONCLUSION

“There are so many errors we can no longer predict, what you can predict is the effect of the error on you!”

— Nassim Nicholas Taleb ▼

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