

Chasing Black Swan Tails

By Patrick Marren

Much has been made lately of “long tails” and “Black Swans.”

The latter is a formulation of Nassim Nicholas Taleb, an options trader and academic whose book, *The Black Swan*, lays out what Black Swans are and why just about everyone but him in the financial world is a fool. It is quite entertaining and also informative. In fact, during one three-page stretch, I had the exhilarating feeling that my entire University of Chicago MBA in Finance had just gone up in smoke. I highly recommend the book, both for enjoyment and edification (and so readers learn the vital lesson of not crossing Mr. Taleb lightly).

A Black Swan seems to be defined as a future circumstance the possibility of which is either completely overlooked, or deemed to be extremely unlikely, but whose consequences would be massive. In Europe in the 1700s, as Taleb says, all swans were assumed to be white. Until Europeans went to Australia, whiteness was assumed to be a defining characteristic of swans; historical data contained no hint that black swans were anything but an oxymoron. Then that first passel of convicts alit on Botany Bay, and the jig was up. A new concatenation of attributes, the black swan, was encountered. The limitations of historical data (the only type there is) were shown for all who had the wherewithal to appreciate them.

MAKING SENSE OF TAILS – LONG ONES, FAT ONES...

So what do black swans have to do with Wall Street, or “tails” ? Well, according to Taleb, standard financial models – the famous Capital Asset Pricing Model (CAPM), for example – tend to assume that all financial phenomena are accurately represented by Gaussian statistical distributions, i.e., by the well-known “bell curve.” The vast majority of outcomes in a Gaussian distribution will occur under the thick part of the “bell,” near the mean/median. The outward-curving “tails” to the lower right and lower left

of the “bell” will be fairly insignificant in size, and the odds of an outcome falling too far out in either direction will be very long.

But standard financial models, Taleb says, are wrong. Either the financial phenomena in question are not accurately represented as Gaussian distributions at all, or the “tails” of the bell curves in question are “longer” or “fatter” than assumed. When there is a “long” or “fat tail,” that is, when the range of plausible outcomes is much farther from the expected value than most people appreciate, it is usually because the (necessarily historical) data set they are working from does not happen to contain outcomes that truly represent the actual variability inherent in the phenomenon in question. For example, the data sets used by many traders for their models of financial markets in recent years leading up to the debacle of 2008 often extended back only fifteen, ten, in some cases just *five* years. The fifteen years leading up to 2008 are now correctly seen as an extremely atypically placid, turbulence-free period in financial history.

To paraphrase Taleb himself, this is like modeling your weather forecast for a tornado-prone region on a two-week period where it did not even rain. The vast majority of time periods, however, will not contain a tornado. So people naturally get lulled into a far too rosy outlook on what is possible, and this is what makes for financial bubbles. So *The Black Swan* was almost perfectly timed: it was released just before the financial world melted down in a manner fully consistent with the book.

CUTTING TO THE CHASE WITH SCENARIOS

Taleb has certainly achieved something important. He seems to have torn down much of what passed for wisdom over the past few decades on Wall Street (and Main Street). But where does that negative achievement leave people who need to make high-stakes decisions today about things

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that may or may not happen tomorrow? Taleb has little to say in *The Black Swan* about how organizations should cope with the radically larger level of irreducible uncertainty he uncovers. Where to turn?

Well, let us start by saying that there has been an awful lot of false precision over the past several decades. There has been far too much reliance upon detailed probabilistic models of what the future might bring, far too often based on (historical) data that may or may not have any relevance in the future, and which in any case may be overwhelmed by exogenous events.

So part of the solution is to abandon the search for accurate, detailed prediction of the future – because it is impossible, and because it is dangerous. Black Swans demand an approach that explicitly takes irreducible uncertainty into account, rather than pretending it does not exist. Scenarios are an excellent way to do this. Why? Because scenarios don't assume ANYTHING about “the shape of the curve.” Scenarios are not about probability at all.

All scenarios ask is, “What are the critical variables you are relying on for survival and prosperity and avoidance of catastrophe?” And then scenarios simply assume a variety of future states for these variables (both “positive” and “negative”), and then ask you how you might prepare for these outcomes.

Scenarios short-circuit the entire “tail” discussion and cut to the chase -- (1) What are the quantities or conditions of ultimate importance to your future? (2) If these change, for whatever reason, what are you going to do about it?

Scenarios are about impact, not probability. They are about spurring creative imagination, not escaping into false precision. A Black Swan is something that has yet to be imagined, because it has yet to be experienced, and therefore it has yet to be stored in our databases. Normal probabilistic modeling cannot help you imagine what has not happened yet. Scenarios, on the other hand, are designed to help you imagine any number of different colors of swans... as well as flat elephants, round snakes, and many other things you've never seen, but might well, someday soon.

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