

## Nassim Nicholas Taleb: To Prevail in an Uncertain World, Get Convex

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Investment professionals know the value of a convex bond – it gains more from falling rates than it loses from rising ones. According to Nassim Nicholas Taleb, people and institutions can and should position themselves to be convex. Indeed, they should be antifragile – ready to gain from disorder or uncertainty.

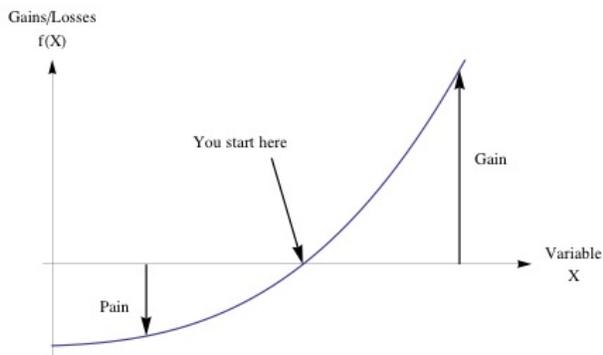
That is the theme of the provocative, sometimes playful and often infuriating book, *Antifragile: Things That Gain From Disorder*, by Taleb, a philosopher and businessman.

Say that a shock to the environment causes you to have an equal probability of moving left or right along the x-axis in Figure 1 below. Your well-being is on the y-axis. You stand to gain more from a move to the right than you stand to lose from an equal move to the left, so you're better off with the shock than without it.

You're convex.

You're not just "not fragile" — that would be a straight line in the diagram. You're antifragile.

- **Figure 1: Why it's good to be convex**



Source: Taleb, Nassim. 2012. *Antifragile: Things that Gain from Disorder*. New York: Random House, p. 273.





Convexity refers to the shape of the curve in Figure 1. A convex curve bends away from the origin, the point where the x and y axes cross. A curve that bends the other way is concave. Things that are convex benefit from uncertainty, while things that are concave are hurt by it. The book argues that in a world in which predictions are mostly useless, we want to be convex.

Instead of using the term “convexity” throughout, Taleb renamed this principle antifragility. He didn’t think convexity would resonate with most readers, who are not investment professionals. Moreover, antifragility is not just robustness. Antifragility is as distant from robustness as robustness is from fragility. Unlike a robust person or system, an antifragile one is actually made better off by stress or disorder.

The rest of Taleb’s weighty book is an elaboration of this neat idea, filled in with characters familiar from the author’s previous works: Fat Tony, an unlettered but wise securities trader; Nero Tulip, a ringer for Taleb himself; and the very real Robert Merton. Taleb regards Merton, who developed an option pricing formula, as the worst of a large crowd of Nobel-decorated charlatans. Taleb calls these people “fragilistas” and argues that their theories and actions have weakened financial institutions. In Taleb’s view, Merton’s option pricing formula, developed with Fischer Black and Myron Scholes, was unoriginal and used “fictional mathematics”. Taleb also criticizes Merton for his role in the 1998 Long-Term Capital Management fiasco.<sup>1</sup> The writing of *Antifragile* seems to have been motivated by Taleb’s anger at the fragilistas. He blames them for creating the conditions that led up to the crash of 2008, in which institutions and firms that were thought to be strong were stress-tested by events and found to be hollow.

*Antifragile* is the third book in Taleb’s “Incerto” (Italian for uncertain) trilogy. The first two books in the trilogy, *Fooled by Randomness* and *The Black Swan*, have made Taleb the “hottest thinker in the world,” according to the *London Times*. *Fooled by Randomness* is Taleb’s best book, followed by *The Black Swan*. The current volume is too long and disjointed to join his earlier ones on my top shelf. But if you can tolerate the pretension of a writer who gives Italian names to collections of his English-language books, *Antifragile* is a worthy read. It is a valuable extension of Taleb’s earlier work on the themes of randomness and unpredictability.

### **Antifragility in business and markets**

For a man of the markets who made his fortune in options trading, Taleb devotes surprisingly little space in this book to business, finance and investments. Mostly, the book is a philosophy treatise. Taleb pays some attention to markets in his technical chapters, 18 and 19, but they are not all that technical. They’re within easy reach of the readers of this publication.



## **Who's afraid of the big bad bank?**

I happen to like big banks as a customer. Wherever I travel, there's a branch. They are familiar with procedures such as wire transfers and foreign exchange. And there's usually someone who speaks English in each location.

But as Taleb points out, big banks are fragile because their size magnifies mistakes in a nonlinear way. In 2008, a French rogue trader named Jerome Kerviel bought \$70 billion in stocks for the account of the bank Société Générale, stocks that the bank was not supposed to own and therefore had to sell immediately. The massive sell order caused a 7% dip in the French equity market and a larger decline in the stocks actually sold. The net result was a \$6 billion loss for the bank. (The bank's net income was \$3.6 billion in 2011 and \$1.6 billion in 2012.)

If 10 banks had existed instead, with total assets equaling the actual asset size of Société Générale, and 10 "Micro-Kerviels" (Taleb's phrase) had performed the same dastardly act on different days, the market would have absorbed the pressure without a ripple. There would have been no losses.

Just a few weeks before Kerviel's purchase, Taleb made a presentation to the Société Générale board and was "heckled relentlessly by Kerviel's boss and his colleague, the head of risk management. ... Everyone ignored me, as if I were a Martian." Taleb reflects that Kerviel's mistake was attributed to bad controls or greed, but, "The problem is ... the fragility that comes from size."

## **Why Fannie Mae went under**

Taleb presents a simple rule of thumb for assessing the health of a company facing volatile conditions. If sales increase 10%, will profits increase less than they would decrease if sales drop 10%? If so, that company is fragile and will not withstand much volatility. Its problems will compound downward in a death spiral, which is what happened to Fannie Mae.

But Taleb had difficulty getting his measure used. "It looked simple, too simple, so the initial reaction from 'experts' was that it was 'trivial.'" For fun, Taleb later joined with the mathematicians Raphael Douady and Bruno Dupire to express "this simple idea using the most opaque mathematical derivations, with incomprehensible theorems that would take half a day (for a professional) to understand." Then, he says, experts took him seriously.



## **Antifragility in everyday life**

As nearly all “big think” books do, *Antifragile* then applies his favored concept to virtually everything. An example, first set forth in *The Black Swan* but elaborated in *Antifragile*, is his recipe for success: “One foot in Extremistan, one foot in Mediocristan.” Taleb says people should position themselves in both of these fictional places. Mediocristan is where the uncertainties of life are smoothed out, and Extremistan is where someone can benefit from them.

In Mediocristan, Taleb argues, no one is much more successful than anyone else despite real differences in skill. In Extremistan, the winner takes almost all. A very successful dentist in Mediocristan probably earns no more than three or four times what a very unsuccessful dentist earns, despite being more than four times as skillful. The rewards for being spectacular just aren’t there.

Meanwhile, LeBron James, lately of basketball’s Miami Heat, lives in Extremistan. He earns in a week what a very well paid high-school basketball coach earns in 10 years. Maybe he’s that good, but a better explanation is that most spectators are only interested in seeing the top stars, who can therefore command paychecks way out of proportion to their talent.

Taleb would argue that the dentist’s job is antifragile – people will always get toothaches – while James’ is fragile, with dozens of younger players eager to cut him down to size. Which road should an ambitious person pursue? Ideally both, since the antifragile activity provides a lifetime of paychecks (including to those who are only average) and the fragile one conveys the opportunity to really excel. My son, who as far as I know has not read Taleb’s books, is pursuing this strategy successfully: he’s a touring rock musician who also gives guitar lessons. While we can’t all have such a nicely balanced portfolio of jobs, it does make sense to try.

## **Eat like a caveman, lift like a caveman**

Some of Taleb’s applications of his favored principle are pretty farfetched. Taleb notes that the human body seems well adapted to short periods of deprivation, so that people who eat irregularly thrive and avoid contracting diabetes. He also believes, as do many people, that what humans ate when we were evolving in primitive conditions is healthful, so he recommends a “paleo” diet, one that emphasizes the lean meats, fruits, vegetables and unprocessed foods that were available to our hunter-gatherer ancestors.

Taleb, Greek Orthodox by background, finds that the many fasts observed by that religion correspond well to the pace of food intake he favors. The lifestyle sounds terrible. The Greek Orthodox monks of Mount Athos, who follow the fasting schedule rigorously, are



famously undernourished (see Michael Lewis' book *Boomerang*). But Taleb himself is big and strong, as he is inordinately fond of boasting. Wanting to appear more physically intimidating, Taleb took up weightlifting, but (of course) not in the conventional way. He only lifts the heaviest weight he can handle, and avoids repetitions – roughly what a caveman would have done – believing this method to be both time-efficient and good for his muscles and bones. Maybe it is, but I hope his joints and ligaments are also antifragile, or he'll have a tough time getting around in 20 years. One cannot apply a single clever idea to every possible situation.

### **Fighting the last war**

Another shortcoming of *Antifragile* is that its prescriptions seem designed to win the last war, the war to keep the global financial system from collapsing. While this could happen again, the problems that now seem most acute to me are not generally ones of systemic or even corporate fragility. I am more concerned about slow growth, high unemployment, skill mismatches in the labor market, massive government spending and debt and a mushrooming number of retirees and disabled people per active worker. These difficulties are not infrastructural – as financial-system problems are – and the quest for antifragility has limited applicability to them.

The ongoing pension and Social Security crisis, however, is a fragility problem par excellence. The pay-as-you-go Social Security system depends on an ever-expanding pool of worker-taxpayers and collapses if the next generation is smaller than the current one. Thus it is intrinsically fragile. But as Paul Samuelson (who helped design the system) confesses, it was intended to be that way.<sup>ii</sup> Some fragile institutions were put into place to satisfy powerful political desires – in the case of Social Security, the desire to keep benefits high and taxes low – and it is very hard to undo these decisions or to avoid them in the first place.

### **The crash of 2008: Black swan or black turkey?**

Taleb's reputation soared when the crash of 2008 appeared to vindicate his concern about Black Swan events, but his ongoing characterization of that particular market decline as a Black Swan is classic Talebian overstatement.<sup>iii</sup> A black swan is an event that is so unlikely that it cannot be foreseen from past history and so influential that, in the words of the University of Chicago economist Thomas Coleman, it “completely changes the terms of discussion.”<sup>1</sup>

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<sup>1</sup> Thomas S. Coleman, “Black Swans and Brown Turkeys.” Unpublished. <http://www.closemountain.com/papers/brownturkeys.html>. Coleman is executive director of the Becker Friedman Institute at the University of Chicago.



As I pointed out in a 2010 *Financial Analysts Journal* article, “the crisis was a black turkey, an event that is everywhere in the data — it happens all the time — but to which one is willfully blind.”<sup>iv</sup> Without looking very hard (that is, leaving out oddball asset classes and emerging markets), I found 10 other financial-market crisis of comparable severity in the last 110 years. They affected stocks, bonds, gold and oil. The most recent was only 11 years ago. To call the crash of 2008 a black swan is more puffery than science.

### **The relationship between science and technology**

An interesting line of thought pursued by Taleb is that technology precedes and motivates scientific discovery. Most people think of this process as occurring the other way around, with scientific advances enabling later technological improvements. An example of Taleb’s theory from finance is option trading, which began in the days of the Greek merchant and philosopher Thales. Option trading was a refined art for centuries before the French mathematician Louis Bachelier and others who came later made a mathematical science of it. The existence of the options and of a body of knowledge used to trade them inspired scientists to formalize the various option pricing equations that now decorate finance textbooks.

This story, which is accurately told, supports Taleb’s more general hypothesis that scientists do not typically create disembodied thoughts for which engineers and businessmen later find applications. Instead, the relationship between technology and science is two-way and organic. This thought is immensely appealing and, for many readers, sheds new light on the way that invention and innovation take place. But scientists should not shy away from basic research with no visible application. Sometimes, that approach really does turn up something valuable.

### **My library isn’t big enough**

I’d like to think I could study any subject covered in a popular book without building a new wing on my house to store the further reading. Taleb makes me wonder. In one particularly packed six-page section (pp. 309-314), he drops the names of Simonides of Ceos, Raymond Aron, Ovid, “the French-Russian poetess Elsa Triolet,” Jules Verne, H. G. Wells, George Orwell, Hero the Alexandrian, Leonardo da Vinci, David Edgerton, Homer, Plato, “the very modern Shakespeare” (agreed), Phidias, Michelangelo and “the great Canova.” Is this my idea of fun? Sure. But it is also the signature of an insecure author who is trying too hard.

### **Taleb the mainstream academic**

A notable irony is that, while Taleb lampoons conventional finance – and academic knowledge in general – in his popular writings, he is also a serious scholar and professor



who is directly engaged in the academic world. His title at Polytechnic Institute of New York University, distinguished professor of risk engineering, suggests he might actually be a fragilista in his day job. I don't think he is, but I don't think his nemesis Robert Merton is either.<sup>v</sup>

### **Read this book (but bring a grain of salt)**

Any anti-intellectual intellectual book — any book that says there are earthier roads to wisdom than book learning — is going to have shortcomings. The main shortcoming of this genre is that the great thinkers deserve more respect than the writer is inclined to give them. *Antifragile* fits this description. But if readers have a big vocabulary or would like to acquire one and do not mind an author whose persona alternates between bullying know-it-all and charming raconteur, they will find much of *Antifragile* to be thought-provoking fun.

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<sup>i</sup> Taleb attributes the option pricing formula to “Louis Bachelier, Ed Thorp, and others” (*The Black Swan*, p. 282). I don’t know Thorp’s work very well, but Bachelier’s formula certainly anticipated major aspects of Black-Scholes-Merton, without being identical to it.

<sup>ii</sup> <http://gregmankiw.blogspot.com/2011/09/paul-samuelson-on-social-security.html>

<sup>iii</sup> While the statement is not in *Antifragile*, it is very much a part of Taleb’s ongoing conversation with the investing public. The BBC’s Janan Ganesh writes, “Taleb has labelled the 2008 financial crash as a ‘black swan’ event”

(<http://www.bbc.co.uk/news/uk-politics-17287845>). In the process of raising funds from investors for his tail risk portfolio insurance product, called Black Swan Protection Protocol, Taleb has been quoted as saying that his fund doubled its money in the crash year of 2008.

<sup>iv</sup> <http://www.cfapubs.org/doi/pdf/10.2469/faj.v66.n4.4>. Coleman and I disagree on whether the turkey is black or brown.

<sup>v</sup> Merton and other academics had a substantial role in the building of Long-Term Capital Management, a hedge fund that failed in 1998 after racking up huge leverage-related debts. Although this failure made the financial system more fragile, it is just a highly visible example of the principle that, while businesses are supposed to externalize (get other people to pay their costs or losses) to the extent made possible by law, the “other people,” usually represented by governments, are supposed to stop them. The knowledge that a bailout was almost certainly forthcoming thus made it attractive for LTCM to take extraordinary risks, because they faced only the limited downside of going out of business (and later starting new businesses). Merton and the other academics are not blameless because they knew their strategy might wind up exploiting unsuspecting taxpayers, but it seems clear that they understood the risks they were taking.

A clue to Taleb’s animus toward Merton, however, is in the footnote on page 282 of *The Black Swan*: “I am selecting Merton because I found him very illustrative of academically stamped obscurantism. I discovered Merton’s shortcomings from an angry and threatening seven-page letter...” Thus, there are personal reasons for it.