

No Such Thing

You're more likely to run across a black swan than to find a sure bet in the financial markets. A pair of noted risk experts say certainty is for the birds

Maggie Mahar

WALL STREET RARELY talks about the role sheer chance plays in the stock market. After all, most financial professionals make their living forecasting the future. Who wants to dwell on the fact that the future is unpredictable?

But there are those on Wall Street willing to acknowledge that in a world made up of probabilities, nothing is certain. In his landmark study of risk, *Against the Gods: The Remarkable Story of Risk* (John Wiley), Peter Bernstein makes clear that although the laws of nature may be immutable, within the realm of human affairs, no rules can be extracted from the past and applied, with confidence, to the future. Bernstein, who began his career as a portfolio manager in 1951, has spent the past 29 years working as an economic consultant to institutional investors, and he knows that all of the charts, computers, and mathematical models in the world cannot tell us, with any certitude, what the market will do tomorrow, next month, or next year. "Surprise is endemic in the financial world," says Bernstein, and the risk of being surprised is not measurable. He quotes economist John Maynard Keynes on the nature of uncertainty in financial markets: "There is no scientific basis on which to form any calculable probability whatever. We simply do not know."

Nassim Nicholas Taleb adds the punch line: "The most



dangerous error that an investor can make is to mistake probability for certainty." The founder of Empirica Capital, a trading firm in New York, Taleb is a student of risk and a professional risk-taker. In 2001, he added his voice to the debate about risk and risk management with a book that has rolled down Wall Street like a small hand grenade, gathering notice as it goes. *Fooled by Randomness: The Hidden Role of Chance in the Markets and in Life* (Texere) challenges many of the assumptions about risk management that prevailed

throughout the bull market of the 1990s.

Like Bernstein, Taleb recognizes that whereas people resist randomness, markets resist prophecy. The fact that something has happened many times in the past doesn't mean it will happen in the future. The fact that it has never happened doesn't mean that it can't happen. "All we can learn from history," Taleb says, "is that the unpredictable will happen—and does—time and again."

Taleb and Bernstein don't agree on everything. In the end, they offer investors very different advice on how to manage risk. But, taken together, their thoughts provide an assessment of the challenges investors face that is both provocative in its insights and startling in its honesty. Both agree that when investors bet on a probability, they must ask themselves not "how probable is it that I will be right?" but

“how grave will the consequences be if I’m wrong?”

Taleb and Bernstein also agree that investors must, at all times, expect the unexpected. Taleb calls the unexpected “the black swan,” or “the rare event” that lies outside of our experience: we have never seen a black swan, just as, until the ’90s, we had never seen the Dow Jones industrial average climb 1,000 points in less than four years. In fact, it took the benchmark index 76 years just to reach 1,000, a barrier it breached in November 1972. Another 14 years elapsed before the index hit 2,000 in January 1987. Dow 3,000 came four years later, in the spring of 1991. Four years after that, in February 1995, the index broke 4,000. But the bull was just warming up; before the year was out, that rough beast jumped over the moon, breaking 5,000. This time it had taken just nine months. Based on past experience, such jumps seemed, to many, highly improbable—some would have said unimaginable.

Taleb also argues that often we find patterns in data where there are none. “Randomness generates pseudo-patterns,” he observes. “If you asked a computer to randomly generate a series of zeros and ones, eventually you would find patterns—say nine zeros in a row, preceded by two ones.” Similarly, financial pundits who scan market history may think they have found a correlation between stock market dips and changing hemlines or stock market booms and presidential elections when they are simply imposing perceived causal relationships on the randomness of reality. Even when we say that, in the past, the stock market recovered “because” the Federal Reserve cut rates, we can’t be at all certain. In the financial markets, Bernstein points out, “each circumstance is different. You can never duplicate the experiment under exactly the same conditions,” and as a result, it is very difficult to say that “x caused y.”

Financial history is studded with surprises that defy our efforts to find formulas, Bernstein observes. As an example, he points to that period in the ’50s when low-risk, high-grade bonds offered a higher yield than stocks. Previously, stocks always paid higher dividends than AA-rated bonds. But abruptly, in the ’50s, “for the first time in history,” Bernstein notes, the old rules were turned on their heads: bonds paid the higher yield. “A relationship sanctified by more than 80 years of experience suddenly came apart.”

Similarly, he points out, “in the early ’70s, long-term interest rates suddenly rose above 5 percent for the first time since the Civil War.” Again, what had seemed improbable to the point of being nearly impossible had occurred. “These paradigm shifts may not have been unpredictable,” says Bernstein, “but, at the time, they were unthinkable.” And in May 2003, Bernstein noted, with the yield on 30-year Treasuries hovering just a hair below 4.8 percent, the paradigm has now been breached in the opposite direction.

We expect the world to be linear and regular, says Taleb, and that is why we are caught off guard by those events that break with the sure patterns of the past—or what we thought were the patterns of the past. For example, we have been told repeatedly that on average, over a 10-year period, the stock market returns roughly 10 percent. But what of those two separate 20-year periods during the last 100 years when the market returned only 2 percent, after inflation? How does an investor calculate the odds that at some point the market might average even less than 2 percent over 20 years—or that he might find himself stuck in just such a dry spell?

Financial markets defy such calculations, Bernstein and Taleb agree. In the physical world, it’s much easier to calculate probabilities because the possibilities are more likely to be

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finite and clearly defined. “If you roll dice, you know that the odds are one in six that the dice will come up on a particular side,” says Taleb, “because you know the dice have six sides. But, in the stock market such computations are baloney—you don’t even know how many sides the dice have.”

Because the physical world offers a limited range of possibilities, events tend to arrange themselves on a bell curve. Again, Taleb offers a practical example: “Let’s say you graph the weights of all the babies born in the United States over 10 years. Birth weights might range from under a pound to, perhaps, 15 pounds. If you took a large enough sample, and you plotted it on a graph, you’d wind up with a smooth bell curve; there would be no babies weighing 500 pounds to skew it. In physical reality, it would be impossible for a woman to give birth to a 500-pound baby. There are limits to what can happen.”

But if you graphed price-to-earnings ratios of all the stocks in the Standard & Poor’s 500 stock index over a 10-year period, you would have to include the black swans—the unpredictable, unthinkable “outliers,” instances of companies with a P/E of 300, or companies with no earnings and an infinite P/E. They would skew your curve. “This is why Long-Term Capital Management blew up,” says Taleb, referring to the Greenwich, Conn., hedge fund that went under in 1998. “They thought they could scientifically measure their risks. They ignored the possibility of a black swan.”

Given the uncertainties of financial markets, both Bernstein and Taleb acknowledge that it is very difficult to say how much of an investor’s success is due to skill, how much to pure luck. Conventional wisdom has it that the record of a star like Peter Lynch is proof that investing is a game of skill, not chance. Lynch did so well, the thinking goes, because he did better and more thorough research

than others. But Taleb points out that when we look at investors like Lynch, we’re looking at the market’s survivors,

and he argues it may be sheer luck that certain investors survived while others did not. For instance, a trader may just happen to find herself in the right cycle at the right time. If a bear spent the first 10 years of her investing career in a bear market, shorting stocks, she would look like a genius. If an investor tended to buy on dips and bought U.S. equities from 1992 to 1999, she would appear brilliant.

In retrospect, Taleb says, “we look at traders who have made a lot of money, and we tend to think, ‘they made it because they were good.’ Perhaps we have turned the causality on its head,” he argues. “Maybe we consider

them good just because they made money.”

To illustrate his point, he offers a wonderfully ghoulish illustration: Imagine, he says, “an eccentric billionaire who offers you \$10 million to play Russian roulette. He gives you a revolver with six chambers, a bullet in only one chamber, and challenges you to hold it to your head and pull the trigger.” Chances are five in six that you’ll come away with \$10 million; chances are one in six that you won’t come away at all. In other words, there are six possible paths that your story will take—but after the fact, we’ll see only one of them. And, Taleb suggests, if you turn out to be lucky and survive, some journalist might well put you on the cover of a magazine. (“Savvy Risk-Taker Wins \$10 Million.”)

Of course, Taleb concedes, if the roulette-betting fool kept playing, the alternative story line would be likely to catch up with him: “chances are, he wouldn’t survive very long.” But, he notes, “when we look at the stock market’s stars, we’re looking at the survivors from a very large pool of players. Imagine there are thousands of 25-year-olds willing to play Russian roulette, playing each year on their birthdays. At the end of, say, 20 years, we can expect to see a handful of extremely rich survivors—and a very large cemetery.” But that small group of survivors would be hailed as winners—the alternative possibility would be ignored.

Similarly, if thousands of traders are in the market for 20 years, a few are bound to outlast the others, and because they survive, we view them as winners, look up to them, and say they’re more talented than other investors. But maybe they were just lucky—after all, someone had to wind up in the top percentile. Taleb points out that our admiration for these luck-of-the-draw winners is nothing more than survivorship bias. And it applies not only to traders but also to mutual fund managers and to the funds themselves. For instance, let’s say that in 1987 there were 30 mutual funds in the United States devoted to investing in technology and that, over the next 15 years, 6 of the 30 produced average returns of more than 12 percent a year, while the other 24 funds didn’t last and either were closed or folded into other funds. We would probably look at the six with a 15-year record and say that investing in technology funds is not so very risky: after all, on average, technology funds with a 15-year track record returned 12 percent from 1987 to 2002.

What does all of this mean for the individual investor? First, managing risk involves recognizing that “we don’t know what is going to happen—and we have to act as if we don’t know,” says Bernstein. “This is the theme I think about every day. I know that if I have a choice between more than one possibility, I am likely to be wrong in any choice I make.” For that reason, when making a decision, investors must worry, not about the probability that they will lose, but about the size of the risk. Just how steep is the downside?

Because investors tend to focus on the frequency rather than the size of the risk, they pay too much attention to what happens “on average,” Taleb adds. “On average,” stocks beat bonds—but this does not tell us whether equities will trump bonds over the next 10 years. One has to consider the possibility that they won’t. Investing in equities is often a successful strategy, but “it doesn’t matter how frequently a strategy succeeds if failure is too costly to bear,” Taleb observes. In other words, investors must always ask themselves, “What’s the worst thing that can happen, and can I stand it?”

This is why a 55-year-old investor with a nest egg of \$250,000 “would be crazy to put 80 percent of his money into the stock market,” says Bernstein. Even if the odds are high that, over the next 10 years, he will make money, “if he’s wrong, he’s dead.” There is always the possibility, however slim, “that bears like Bob Prechter could be right. We could be facing a long bear market that takes the Dow below 1,000. No one knows.”

In fact, the black swan could appear tomorrow. The stock that everyone said was a safe haven could blow up. “People tend to think of low probability events as being distant in time,” says Bernstein. In other words, we say, “Well, yes, gold went to \$800 an ounce, but that was more than 20 years ago.” Or, “Well, yes, in 1980 we had double-digit inflation—that couldn’t happen now.” But Bernstein is emphatic: “Probability has nothing to do with time.” The surprise that would upset the best-laid forecasts could be waiting just around the corner. “When I explain this to people, they nod their heads,” says Bernstein, “but it is very difficult to get them to believe it, to act on it.”

In part, this is because investors assume that if they just do enough research and have enough information they can protect themselves against surprise. But our information is always imperfect. “We can assemble big pieces of information and little pieces,” says Bernstein, “but we can never get all the pieces together. We never know for sure how good our sample is. The uncertainty is what makes arriving at judgments so difficult and acting on them so risky.”

In our efforts to manage risk, we diversify. But diversification is no insurance against disaster—as many investors who bought a wide range of stocks over the past three years have discovered. “Diversification leaves a great deal to chance,” Bernstein acknowledges. “It doesn’t always work.”

What then is an investor to do? This is where Taleb and

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Bernstein part ways. Taleb suggests that ultimately, for individuals, the stock market may be simply too risky, the randomness too great. This is why he keeps all his own savings in Treasuries. He never buys stocks—not in bull markets, not in bear markets.

As a professional options trader, he does, of course, bet on the market. But he only bets on black swans—the most improbable events. This means he usually loses. It’s as if he’s at the track and only bets on the horse offering the longest odds. If he makes 1,000 bets on 1,000 races (or

1,000 options trades) he’ll probably lose 999 times. But he’ll lose small amounts. (He makes many small bets). And when he wins, that one time out of 1,000, he wins big because the odds were so long that the return is huge.

Trading options for more than 15 years, Taleb has managed to survive bull and bear markets. Many traders have a few good years and then “blow up,” Taleb explains. “The quality of my profits is higher. I make my living by betting against people who take themselves, and their knowledge, too seriously—people who think they can predict the market. And, because no one thinks that the option I pick will pay off, it is always underpriced.” Indeed the stock market may be far less efficient than the racetrack, where the physical limits of horses are more easily measured. At least we know a three-legged horse can’t win. But shares of a company without earnings could go to \$500.

In short, as an individual investing for his own account, Taleb’s strategy is not to diversify but to stick with the bet where random chance plays almost no part (he is assuming, of course, that the U.S. government couldn’t default on its debt). Nor does he try to diversify as a professional, instead betting only on those long shots.

Bernstein takes a different approach. Although “diversification leaves much to chance,” he still believes it is the key to risk management: “It is all we have. Like capitalism, you could say, it is the best of bad alternatives.” Moreover, precisely because financial markets are so unpredictable, “the best way to manage risk is to be exposed to all the risks. This means investing in different classes of assets, taking on the risks of stocks, bonds, real estate,” he adds. Bernstein believes investors should diversify even in areas that make them uneasy: “I once had a partner who said that if you’re comfortable with all of your investments, it’s a sign you’re not sufficiently diversified.”

In other words, investors can be too risk-adverse: “I had

another, older partner who was extremely cautious, as risk-averse as you can get—and he knew it,” Bernstein recalls. “He used to say ‘I’m like a fish that starves to death because whenever I see a worm, I assume there’s a hook in it.’”

Like Taleb, Bernstein views the stock market as a high-risk game, “which is why the 55-year-old with \$250,000 should probably make his major commitment to fixed-income investments. On the other hand, if an investor is very young, I would advise him to shoot for the moon.” But while Bernstein would advise the hypothetical 55-year-old to put the bulk of his savings into investments that guarantee a fixed return, he warns against avoiding stocks altogether. “To be entirely out of the market is also a risk. Stocks can be a hedge against inflation,” he notes. “Each asset class is distinct. Stocks may give you something that nothing else can give you.” This is why he would counsel the older investor to hedge his big bet on fixed income by investing in a variety of other assets.

“And when hedging,” he adds, “you want to get the biggest bang for your buck. Because hedging is always expensive, you want to bet on things where the upside is steepest, so if you win, you’ll win big.” For this reason, he says, “I might well advise that older investor to take a small position in gold—say 5 percent of his portfolio. I also probably would advise him to take a position in Treasury inflation-indexed securities [known as TIPS]. The odds of high inflation seem low right now, but if sustained high inflation suddenly returns, you’ll get a big payoff from TIPS.”

In other words, when it comes to hedging his position, Bernstein, like Taleb, would bet on the black swans. He knows that, even if you can’t see them, they’re there.

Maggie Mahar is the author of Bull! A History of 1982–1999, which will be published by HarperCollins in October.