

# Luck versus Skill in Investing: New Insights from the World of Sports and Beyond

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by Michael Skocpol

Around this time of year, bragging rights and millions of dollars change hands as fantasy football league championships are decided in the final weeks of the NFL regular season. If you're among the 32 million fantasy sports aficionados nationwide and you're still in contention, it's likely that you can thank a mix of skill (identifying the most promising players and drafting them to your roster) and good luck (avoiding injuries; having an unheralded benchwarmer become a star) for getting you this far.

You've also probably already internalized the core lessons of Michael Mauboussin's new book, "The Success Equation: Untangling Skill and Luck in Business, Sports, and Investing," whether you realize it or not. Mauboussin, chief investment strategist at Legg Mason Capital Management and an adjunct professor at Columbia Business School, is best known for identifying cognitive biases that skew decision-making, particularly among investors. In his latest book, he set out to explain how skill and luck interact to determine outcomes across a variety of fields.

Predictably, he achieves mixed results. If "The Success Equation" leaves its readers with any clear message, it's that skill and luck are so thoroughly intertwined in most disciplines as to be nearly impossible to completely separate. This is especially true in business and investing, where the playing field is especially complex and conditions are constantly evolving. (Mauboussin achieves the most success when he turns to sports, where stable rules and ample statistics offer him more fertile material.)

So if you expect Mauboussin, per the book's title, to "untangle" the two, you're likely to be disappointed. With the holidays approaching, your mental image should be that old box of hopelessly knotted Christmas lights in the garage – Mauboussin doesn't so much untangle skill and luck as he plugs in the whole balled-up mess and tugs at the various jumbled strands. He finds numerous specific points of illumination, but he doesn't even really attempt the impractical task of unraveling the entire thing.

That said, Mauboussin's book offers a plethora of simple models and real-world examples to help readers think more systematically and intelligently about how luck and skill influence the results they observe – whether in their fantasy football playoffs or in their stock portfolios. And advisors may come away with an illustration or two or that will come in handy when explaining the vagaries of the market to clients who struggle with concepts like reversion to the mean.

A lot of the book's insights, while somewhat intuitive to readers who already have a solid understanding of statistics, are rarely articulated as clearly as Mauboussin, an expert communicator, renders them. And a few illuminate genuinely surprising phenomena.

I'll discuss a few lessons advisors may find useful in Mauboussin's book, starting with one of its most counterintuitive conclusions – one that may offer ammunition to both sides of the debate over the merits of active investment management.

## **"The paradox of skill"**

The popularity of fantasy sports is just one manifestation of a broader cultural phenomenon that's been building to a crescendo for a while now – the heartwarming, public reconciliation of all those math nerds and athletes who didn't get along in high school. We live in a moment when a movie about a number-crunching major league GM can star the likes of Brad Pitt and earn more than \$100 million at the global box office. And the leading statistical prognosticator of the moment, Nate Silver, honed his skills parsing baseball statistics before going mainstream as a political blogger.

Mauboussin's book taps the same wellspring. Many of his chapters and examples begin with extensive, tidy, analyses of phenomena that statisticians have discerned in the world of sports, replete with graphs and detailed statistical trends stretching back decades. He then more tentatively applies the lessons back to investing and business.

A good example is the "paradox of skill," a concept that Mauboussin introduces early on with an example from baseball and then returns to several times later in the book.

Mauboussin leads his readers to this concept by pointing out an anomaly in the record books: In 1941, the hall-of-famer Ted Williams led the major leagues with a remarkable .406 batting average, and no player has broken .400 since. Mauboussin then relates the efforts of the late Harvard paleontologist and essayist Stephen Jay Gould to understand why.

When Gould examined the statistical evidence, Mauboussin explains, he was able to rule out the idea that Williams was simply much better, on an absolute basis, than any hitter who has come along since then. Indeed, Gould argued, all major league hitters have gotten steadily better with time, such that perhaps Williams wouldn't even stand out as anyone special if he hopped in a time machine and suited up for the Red Sox in 2012.

But pitchers, Gould noted, have gotten better too. Everyone has gotten more skillful, on an absolute basis. As such, Mauboussin writes, everyone has improved "in lockstep." The league-wide batting average of all hitters has hovered pretty consistently around .260 or .270 for decades.

So what's going on? Gould concluded that exceptional performances like Williams' are becoming rarer precisely *because* everyone is getting a lot more skillful. As baseball players slowly get closer to the absolute frontiers of what the human body is capable of – the difference between a home run and a foul ball is milliseconds in an era when pitches cross home plate at 100 mph – there is a clustering effect. If everyone is so talented, it's hard to be that much better than everyone else.

Mauboussin discussed his book with an audience of advisors and investment professionals at the Schwab Impact conference in Chicago last month, where he put this phenomenon in explicitly mathematical terms: "Ted Williams was a four-Sigma event in 1941, four standard deviations away from average," he explained. "If you were a four-standard-deviation-away hitter in 2011, 70 years later, you would have hit .380" – pretty good, but a far cry from the "magic threshold" of .400.

Mauboussin goes a step farther, reasoning that Gould's theory makes a testable prediction: In sports where luck plays less of a role than it does in baseball and the effects of skill can therefore be seen more clearly, absolute performance gains over time should lead to even more pronounced clustering. Using marathon-running as a test case, that's exactly what he finds.

Looking at Olympic marathon results for men between 1932 and 2008, he notes that the winning time has dropped by about 25 minutes over that period *and* the time between the gold medalist and the runner who came in 20th has declined steadily as well. That gap, 40 minutes in 1932, was just 9 minutes in 2008.

So here's the paradox: Even as absolute skill increases, and particularly as it gets incrementally closer to a theoretical maximum, luck will tend to play a bigger role in separating the winners and the losers. "Because everyone is uniformly more skillful, the vagaries of luck are more important than ever," Mauboussin writes.

Mauboussin connects this concept to investing to explain why, with all the tools of modern technology and years of experience at our command, we haven't gotten any better picking winning stocks – and, in fact, there's some evidence that beating the market has gotten harder over time. Citing a classic 1975 essay, "The Loser's Game," by Charles Ellis – which reasoned that if all the participants in the market are getting savvier, then it naturally becomes harder to profit from others' mistakes – Mauboussin concludes that the history of the 20th century in the investment industry played out such that "as the population of skilled investors increased, the variation in skill narrowed, and luck became more important."

According to Mauboussin, research has found steadily declining variance in the excess returns of money managers over time, just as the paradox of skill predicts.

So there you have it – skill exists in investing. Indeed, the most skilled managers today are likely the most skilled there have ever been. But there's more to it.

"It's not that investors lack skill," Mauboussin writes. "As investors have become more sophisticated and the dissemination of information has gotten cheaper and quicker over time, the variation in skill has narrowed, and luck has become more important."

### **"The *post hoc* fallacy"**

If there's one overarching theme of Mauboussin's book, it's that the influence of luck is even more pervasive than we think. The paradox of skill is one example of that, as is another phenomenon that Mauboussin is familiar with as an expert on cognitive biases – the *post hoc* fallacy.

Humans, Mauboussin writes, are pretty good at recognizing the influence of luck when looking ahead to the future. Faced

with the uncertainty of events that have not yet come to pass, only the brashest, most irrational egotist would assume that chance will not hold some sway over what will happen to them in the future. Sure, you can increase the likelihood that you'll win your fantasy league championship by studying hard in the run-up to the draft and keeping apprised of the latest football news, but you still need a healthy dose of good luck to get there.

But we have a deeply ingrained tendency to overlook the role luck may have played in things that already happened. Once we've won the championship, our success feels inevitable – *of course I won! I was the most prepared on draft day!* A baseball player comes to the plate with a one-in-three chance of getting a hit, but once we know that he grounded out we blame his lack of focus or his tepid swing. This is the *post hoc* fallacy.

"Even if we acknowledge ahead of time that an event will combine skill and luck in some measure, once we know how things turned out, we have a tendency to forget about luck," Mauboussin writes.

This should ring familiar to advisors and investors. No matter how many times "past performance is no guarantee of future results" gets repeated as a mantra, the constant instinctive temptation is there – it's hard to remember that the mutual fund with the sterling track record stretching back a decade could have achieved those results by pure luck. (Indeed, Mauboussin writes, with so many funds out there, simple chance predicts that someone will always get lucky like that. We have a strong need to explain success in terms of skill – and to believe the myths that we create for ourselves.

It's hard to remember that just because things turned out one way doesn't mean they couldn't have turned out differently.

Of course, this fallacy is such a compelling and persistent feature of the way that people think about skill and luck precisely because it so hard to fully eradicate. Even seasoned professionals have to constantly guard against this kind of thinking; imagine how hard it is to truly convince a lay investor!

Case in point: Mauboussin's specialty is exactly these kinds behavioral biases. He knows the pitfalls. One of his go-to anecdotes is about a famous behavioral psychologist, Stephen Greenspan, who wrote a book about gullibility and then got snookered by Bernie Madoff.

Yet Mauboussin himself, just moments after writing the sentence I quote above, falls victim to his own fallacy. "There may be an evolutionary reason for this," he writes. "In prehistoric times, it was probably better for survival to take the view that we have some control over events than to attribute everything to luck and give up trying."

But many evolutionary scientists today realize that not every single minute feature that we observe in the living world has a neat, causal, evolutionary explanation. And a plausible evolutionary explanation doesn't mean that, with a little luck, an organism couldn't have evolved a very different adaptation to address the same evolutionary need as well or better.

Maybe it was just some quirk of evolutionary fate – a complex and highly interdependent process working on one of the most complex living systems around, the human brain – that yielded this tendency to impose clear causality on the past and ignore the effects of luck. Maybe it's an innocent byproduct of some seemingly unrelated evolutionary benefit. Or maybe it's dumb luck that we evolved this particular characteristic.

Mauboussin can't help but want to think otherwise. What hope is there for the rest of us?

## **Reversion to the mean**

Other topics Mauboussin takes up will likely interest advisors as well. Reversion to the mean, for example, is a topic Mauboussin rightly points out many people think they understand much better than they do.

"Everybody nods their head when we talk about reversion to the mean, and then you look at how people behave, and they act as if they have no idea what it is about," Mauboussin told advisors at the Schwab conference last month.

His book tries to deal with that by returning to the basics of reversion to the mean and reminding readers that it is not a one-size-fits-all phenomenon: The more skill or other persistent differences affect an outcome, the more slowly observed results will revert to the mean. He encourages readers to think of different activities as falling on a continuum between pure luck (roulette) and pure skill (chess), and use their location on that continuum to determine how much reversion to expect.

Since investing, at least in the short term, is subject to a great deal of chance, it's pretty far toward the luck end of the spectrum, Mauboussin writes. Therefore, it's best to assume that a fund that has exhibited outperformance in the past will come in around the average of its peers going forward. But that Olympic marathon champion? Don't expect him to suddenly turn in a 10-minute mile. Many pursuits – baseball, for instance – will fall somewhere in between, he writes, and your

expectations of future results should occupy that middle ground as well.

That said, Mauboussin does note that prolonged streaks of success are rarely the result of luck alone. Not every great baseball player has gotten a hit in 56 straight games – in fact, only Joe DiMaggio ever has. DiMaggio couldn't have done that if he weren't a great player – and one who happened to get very lucky.

“Not all skillful people have streaks,” Mauboussin told his audience at the Schwab conference. “But all streaks are held by skillful people.”

Similar rules apply to the world of investing; it's just that luck plays a much more dominant role, so the streaks have to last a long time before they can really be taken as evidence of skill – and even then, there's no guarantee that bad luck won't swamp superior skill anyway.

## **Conclusion**

Mathematically inclined advisors may find a lot in this book intuitive. And anyone who's looking for a how-to manual for generating alpha is going to leave disappointed. But Mauboussin is good at what he does – distilling complex statistical and cognitive phenomena with memorable anecdotes and straightforward English. And his lens of skill versus luck provides a handy new vantage point on some common misconceptions.

Perhaps, if nothing else, during the holiday season, this is a book to consider getting for a client or a family member who isn't well versed in thinking about probabilities in a rational dispassionate way. If you want someone to understand better on a basic level why it's so hard to beat the market, no matter how smart and competent your money manager may be, or how they can do everything right and still wind up with disappointing results, you could do worse than to buy them this book.

Or it might help you feel better if your fantasy football team goes down to defeat this week.

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