

The Engine of Capitalism

The planning fallacy is only one of the manifestations of a pervasive optimistic bias. Most of us view the world as more benign than it really is, our own attributes as more favorable than they truly are, and the goals we adopt as more achievable than they are likely to be. We also tend to exaggerate our ability to forecast the future, which fosters optimistic overconfidence. In terms of its consequences for decisions, the optimistic bias may well be the most significant of the cognitive biases. Because optimistic bias can be both a blessing and a risk, you should be both happy and wary if you are temperamentally optimistic.

Optimists

Optimism is normal, but some fortunate people are more optimistic than the rest of us. If you are genetically endowed with an optimistic bias, you hardly need to be told that you are a lucky person—you already feel fortunate. An optimistic attitude is largely inherited, and it is part of a general disposition for well-being, which may also include a preference for seeing the bright side of everything. If you were allowed one wish for your child, seriously consider wishing him or her optimism. Optimists are normally cheerful and happy, and therefore popular; they are resilient in adapting to failures and hardships, their chances of clinical depression are reduced, their immune system is stronger, they take better care of their health, they feel healthier than others and are in fact likely to live longer. A study of people who exaggerate their expected life span beyond actuarial predictions showed that they work longer hours, are more optimistic about their future income, are more likely to remarry after divorce (the classic “triumph of hope over experience”), and are more prone to bet on individual stocks. Of course, the blessings of optimism are offered only to individuals who are only mildly biased and who are able to “accentuate the positive” without losing track of reality.

Optimistic individuals play a disproportionate role in shaping our lives. Their decisions make a difference; they are the inventors, the entrepreneurs, the political and military leaders—not average people. They got to where they are by seeking challenges and taking risks. They are talented and they have been lucky, almost certainly luckier than they acknowledge. They are probably optimistic by temperament; a survey of founders of small businesses concluded that entrepreneurs are more sanguine than midlevel managers about life in general. Their experiences of success have confirmed their faith in their judgment and in their ability to

control events. Their self-confidence is reinforced by the admiration of others. This reasoning leads to a hypothesis: the people who have the greatest influence on the lives of others are likely to be optimistic and overconfident, and to take more risks than they realize.

The evidence suggests that an optimistic bias plays a role—sometimes the dominant role—whenever individuals or institutions voluntarily take on significant risks. More often than not, risk takers underestimate the odds they face, and do invest sufficient effort to find out what the odds are. Because they misread the risks, optimistic entrepreneurs often believe they are prudent, even when they are not. Their confidence in their future success sustains a positive mood that helps them obtain resources from others, raise the morale of their employees, and enhance their prospects of prevailing. When action is needed, optimism, even of the mildly delusional variety, may be a good thing.

Entrepreneurial Delusions

The chances that a small business will survive for five years in the United States are about 35%. But the individuals who open such businesses do not believe that the statistics apply to them. A survey found that American entrepreneurs tend to believe they are in a promising line of business: their average estimate of the chances of success for “any business like yours” was 60%—almost double the true value. The bias was more glaring when people assessed the odds of their own venture. Fully 81% of the entrepreneurs put their personal odds of success at 7 out of 10 or higher, and 33% said their chance of failing was zero.

The direction of the bias is not surprising. If you interviewed someone who recently opened an Italian restaurant, you would not expect her to have underestimated her prospects for success or to have a poor view of her ability as a restaurateur. But you must wonder: Would she still have invested money and time if she had made a reasonable effort to learn the odds—or, if she did learn the odds (60% of new restaurants are out of business after three years), paid attention to them? The idea of adopting the outside view probably didn't occur to her.

One of the benefits of an optimistic temperament is that it encourages persistence in the face of obstacles. But persistence can be costly. An impressive series of studies by Thomas Åstebro sheds light on what happens when optimists receive bad news. He drew his data from a Canadian organization—the Inventor's Assistance Program—which

collects a small fee to provide inventors with an objective assessment of the commercial prospects of their idea. The evaluations rely on careful ratings of each invention on 37 criteria, including need for the product, cost of production, and estimated trend of demand. The analysts summarize their ratings by a letter grade, where D and E predict failure—a prediction made for over 70% of the inventions they review. The forecasts of failure are remarkably accurate: only 5 of 411 projects that were given the lowest grade reached commercialization, and none was successful.

Discouraging news led about half of the inventors to quit after receiving a grade that unequivocally predicted failure. However, 47% of them continued development efforts even after being told that their project was hopeless, and on average these persistent (or obstinate) individuals doubled their initial losses before giving up. Significantly, persistence after discouraging advice was relatively common among inventors who had a high score on a personality measure of optimism—on which inventors generally scored higher than the general population. Overall, the return on private invention was small, “lower than the return on private equity and on high-risk securities.” More generally, the financial benefits of self-employment are mediocre: given the same qualifications, people achieve higher average returns by selling their skills to employers than by setting out on their own. The evidence suggests that optimism is widespread, stubborn, and costly.

Psychologists have confirmed that most people genuinely believe that they are superior to most others on most desirable traits—they are willing to bet small amounts of money on these beliefs in the laboratory. In the market, of course, beliefs in one's superiority have significant consequences. Leaders of large businesses sometimes make huge bets in expensive mergers and acquisitions, acting on the mistaken belief that they can manage the assets of another company better than its current owners do. The stock market commonly responds by downgrading the value of the acquiring firm, because experience has shown that efforts to integrate large firms fail more often than they succeed. The misguided acquisitions have been explained by a “hubris hypothesis”: the executives of the acquiring firm are simply less competent than they think they are.

The economists Ulrike Malmendier and Geoffrey Tate identified optimistic CEOs by the amount of company stock that they owned personally and observed that highly optimistic leaders took excessive risks. They assumed debt rather than issue equity and were more likely than others to “overpay for target companies and undertake value-destroying mergers.” Remarkably, the stock of the acquiring company suffered substantially more in mergers if the CEO was overly optimistic by

the authors' measure. The stock market is apparently able to identify overconfident CEOs. This observation exonerates the CEOs from one accusation even as it convicts them of another: the leaders of enterprises who make unsound bets do not do so because they are betting with other people's money. On the contrary, they take greater risks when they personally have more at stake. The damage caused by overconfident CEOs is compounded when the business press anoints them as celebrities; the evidence indicates that prestigious press awards to the CEO are costly to stockholders. The authors write, "We find that firms with award-winning CEOs subsequently underperform, in terms both of stock and of operating performance. At the same time, CEO compensation increases, CEOs spend more time on activities outside the company such as writing books and sitting on outside boards, and they are more likely to engage in earnings management."

Many years ago, my wife and I were on vacation on Vancouver Island, looking for a place to stay. We found an attractive but deserted motel on a little-traveled road in the middle of a forest. The owners were a charming young couple who needed little prompting to tell us their story. They had been schoolteachers in the province of Alberta; they had decided to change their life and used their life savings to buy this motel, which had been built a dozen years earlier. They told us without irony or self-consciousness that they had been able to buy it cheap, "because six or seven previous owners had failed to make a go of it." They also told us about plans to seek a loan to make the establishment more attractive by building a restaurant next to it. They felt no need to explain why they expected to succeed where six or seven others had failed. A common thread of boldness and optimism links businesspeople, from motel owners to superstar CEOs.

The optimistic risk taking of entrepreneurs surely contributes to the economic dynamism of a capitalistic society, even if most risk takers end up disappointed. However, Marta Coelho of the London School of Economics has pointed out the difficult policy issues that arise when founders of small businesses ask the government to support them in decisions that are most likely to end badly. Should the government provide loans to would-be entrepreneurs who probably will bankrupt themselves in a few years? Many behavioral economists are comfortable with the "libertarian paternalistic" procedures that help people increase their savings rate beyond what they would do on their own. The question of whether and how government should support small business does not have

an equally satisfying answer.

Competition Neglect

It is tempting to explain entrepreneurial optimism by wishful thinking, but emotion is only part of the story. Cognitive biases play an important role, notably the System 1 feature WYSIATI.

- We focus on our goal, anchor on our plan, and neglect relevant base rates, exposing ourselves to these planning fallacy.
- We focus on what we want to do and can do, neglecting the plans and skills of others.
- Both in explaining the past and in predicting the future, we focus on the causal role of skill and neglect the role of luck. We are therefore prone to an *illusion of control*.
- We focus on what we know and neglect what we do not know, which makes us overly confident in our beliefs.

The observation that “90% of drivers believe they are better than average” is a well-established psychological finding that has become part of the culture, and it often comes up as a prime example of a more general above-average effect. However, the interpretation of the finding has changed in recent years, from self-aggrandizement to a cognitive bias. Consider these two questions:

Are you a good driver?

Are you better than average as a driver?

The first question is easy and the answer comes quickly: most drivers say yes. The second question is much harder and for most respondents almost impossible to answer seriously and correctly, because it requires an assessment of the average quality of drivers. At this point in the book it comes as no surprise that people respond to a difficult question by answering an easier one. They compare themselves to the average without ever thinking about the average. The evidence for the cognitive interpretation of the above-average effect is that when people are asked about a task they find difficult (for many of us this could be “Are you better than average in starting conversations with strangers?”), they readily rate themselves as below average. The upshot is that people tend to be overly

optimistic about their relative standing on any activity in which they do moderately well.

I have had several occasions to ask founders and participants in innovative start-ups a question: To what extent will the outcome of your effort depend on what you do in your firm? This is evidently an easy question; the answer comes quickly and in my small sample it has never been less than 80%. Even when they are not sure they will succeed, these bold people think their fate is almost entirely in their own hands. They are surely wrong: the outcome of a start-up depends as much on the achievements of its competitors and on changes in the market as on its own efforts. However, WY SIATI plays its part, and entrepreneurs naturally focus on what they know best—their plans and actions and the most immediate threats and opportunities, such as the availability of funding. They know less about their competitors and therefore find it natural to imagine a future in which the competition plays little part.

Colin Camerer and Dan Lovallo, who coined the concept of competition neglect, illustrated it with a quote from the then chairman of Disney Studios. Asked why so many expensive big-budget movies are released on the same days (such as Memorial Day and Independence Day), he replied:

Hubris. Hubris. If you only think about your own business, you think, "I've got a good story department, I've got a good marketing department, we're going to go out and do this." And you don't think that everybody else is thinking the same way. In a given weekend in a year you'll have five movies open, and there's certainly not enough people to go around. re

The candid answer refers to hubris, but it displays no arrogance, no conceit of superiority to competing studios. The competition is simply not part of the decision, in which a difficult question has again been replaced by an easier one. The question that needs an answer is this: Considering what others will do, how many people will see our film? The question the studio executives considered is simpler and refers to knowledge that is most easily available to them: Do we have a good film and a good organization to market it? The familiar System 1 processes of WY SIATI and substitution produce both competition neglect and the above-average effect. The consequence of competition neglect is excess entry: more competitors enter the market than the market can profitably sustain, so their average outcome is a loss. The outcome is disappointing for the typical entrant in the market, but the effect on the economy as a whole could well be positive. In fact, Giovanni Dosi and Dan Lovallo call

entrepreneurial firms that fail but signal new markets to more qualified competitors “optimistic martyrs”—good for the economy but bad for their investors.

Overconfidence

For a number of years, professors at Duke University conducted a survey in which the chief financial officers of large corporations estimated the returns of the Standard & Poor's index over the following year. The Duke scholars collected 11,600 such forecasts and examined their accuracy. The conclusion was straightforward: financial officers of large corporations had no clue about the short-term future of the stock market; the correlation between their estimates and the true value was slightly less than zero! When they said the market would go down, it was slightly more likely than not that it would go up. These findings are not surprising. The truly bad news is that the CFOs did not appear to know that their forecasts were worthless.

In addition to their best guess about S&P returns, the participants provided two other estimates: a value that they were 90% sure would be too high, and one that they were 90% sure would be too low. The range between the two values is called an “80% confidence interval” and outcomes that fall outside the interval are labeled “surprises.” An individual who sets confidence intervals on multiple occasions expects about 20% of the outcomes to be surprises. As frequently happens in such exercises, there were far too many surprises; their incidence was 67%, more than 3 times higher than expected. This shows that CFOs were grossly overconfident about their ability to forecast the market. *Overconfidence* is another manifestation of WYSIATI: when we estimate a quantity, we rely on information that comes to mind and construct a coherent story in which the estimate makes sense. Allowing for the information that does not come to mind—perhaps because one never knew it—is impossible.

The authors calculated the confidence intervals that would have reduced the incidence of surprises to 20%. The results were striking. To maintain the rate of surprises at the desired level, the CFOs should have said, year after year, “There is an 80% chance that the S&P return next year will be between -10% and +30%.” The confidence interval that properly reflects the CFOs' knowledge (more precisely, their ignorance) is more than 4 times wider than the intervals they actually stated.

Social psychology comes into the picture here, because the answer that a truthful CFO would offer is plainly ridiculous. A CFO who informs his colleagues that “there is a good chance that the S&P returns will be

between -10% and +30%" can expect to be laughed out of the room. The wide confidence interval is a confession of ignorance, which is not socially acceptable for someone who is paid to be knowledgeable in financial matters. Even if they knew how little they know, the executives would be penalized for admitting it. President Truman famously asked for a "one-armed economist" who would take a clear stand; he was sick and tired of economists who kept saying, "On the other hand..."

Organizations that take the word of overconfident experts can expect costly consequences. The study of CFOs showed that those who were most confident and optimistic about the S&P index were also overconfident and optimistic about the prospects of their own firm, which went on to take more risk than others. As Nassim Taleb has argued, inadequate appreciation of the uncertainty of the environment inevitably leads economic agents to take risks they should avoid. However, optimism is highly valued, socially and in the market; people and firms reward the providers of dangerously misleading information more than they reward truth tellers. One of the lessons of the financial crisis that led to the Great Recession is that there are periods in which competition, among experts and among organizations, creates powerful forces that favor a collective blindness to risk and uncertainty.

The social and economic pressures that favor overconfidence are not restricted to financial forecasting. Other professionals must deal with the fact that an expert worthy of the name is expected to display high confidence. Philip Tetlock observed that the most overconfident experts were the most likely to be invited to strut their stuff in news shows. Overconfidence also appears to be endemic in medicine. A study of patients who died in the ICU compared autopsy results with the diagnosis that physicians had provided while the patients were still alive. Physicians also reported their confidence. The result: "clinicians who were 'completely certain' of the diagnosis antemortem were wrong 40% of the time." Here again, expert overconfidence is encouraged by their clients: "Generally, it is considered a weakness and a sign of vulnerability for clinicians to appear unsure. Confidence is valued over uncertainty and there is a prevailing censure against disclosing uncertainty to patients." Experts who acknowledge the full extent of their ignorance may expect to be replaced by more confident competitors, who are better able to gain the trust of clients. An unbiased appreciation of uncertainty is a cornerstone of rationality—but it is not what people and organizations want. Extreme uncertainty is paralyzing under dangerous circumstances, and the admission that one is merely guessing is especially unacceptable when the stakes are high. Acting on pretended knowledge is often the preferred solution.

When they come together, the emotional, cognitive, and social factors that support exaggerated optimism are a heady brew, which sometimes leads people to take risks that they would avoid if they knew the odds. There is no evidence that risk takers in the economic domain have an unusual appetite for gambles on high stakes; they are merely less aware of risks than more timid people are. Dan Lovallo and I coined the phrase “bold forecasts and timid decisions” to describe the background of risk taking.

The effects of high optimism on decision making are, at best, a mixed blessing, but the contribution of optimism to good implementation is certainly positive. The main benefit of optimism is resilience in the face of setbacks. According to Martin Seligman, the founder of positive psychology, an “optimistic explanation style” contributes to resilience by defending one’s self-image. In essence, the optimistic style involves taking credit for successes but little blame for failures. This style can be taught, at least to some extent, and Seligman has documented the effects of training on various occupations that are characterized by a high rate of failures, such as cold-call sales of insurance (a common pursuit in pre-Internet days). When one has just had a door slammed in one’s face by an angry homemaker, the thought that “she was an awful woman” is clearly superior to “I am an inept salesperson.” I have always believed that scientific research is another domain where a form of optimism is essential to success: I have yet to meet a successful scientist who lacks the ability to exaggerate the importance of what he or she is doing, and I believe that someone who lacks a delusional sense of significance will wilt in the face of repeated experiences of multiple small failures and rare successes, the fate of most researchers.

The Premortem: A Partial Remedy

Can overconfident optimism be overcome by training? I am not optimistic. There have been numerous attempts to train people to state confidence intervals that reflect the imprecision of their judgments, with only a few reports of modest success. An often cited example is that geologists at Royal Dutch Shell became less overconfident in their assessments of possible drilling sites after training with multiple past cases for which the outcome was known. In other situations, overconfidence was mitigated (but not eliminated) when judges were encouraged to consider competing hypotheses. However, overconfidence is a direct consequence of features

of System 1 that can be tamed—but not vanquished. The main obstacle is that subjective confidence is determined by the coherence of the story one has constructed, not by the quality and amount of the information that supports it.

Organizations may be better able to tame optimism and individuals than individuals are. The best idea for doing so was contributed by Gary Klein, my “adversarial collaborator” who generally defends intuitive decision making against claims of bias and is typically hostile to algorithms. He labels his proposal the *premortem*. The procedure is simple: when the organization has almost come to an important decision but has not formally committed itself, Klein proposes gathering for a brief session a group of individuals who are knowledgeable about the decision. The premise of the session is a short speech: “Imagine that we are a year into the future. We implemented the plan as it now exists. The outcome was a disaster. Please take 5 to 10 minutes to write a brief history of that disaster.”

Gary Klein's idea of the premortem usually evokes immediate enthusiasm. After I described it casually at a session in Davos, someone behind me muttered, “It was worth coming to Davos just for this!” (I later noticed that the speaker was the CEO of a major international corporation.) The premortem has two main advantages: it overcomes the groupthink that affects many teams once a decision appears to have been made, and it unleashes the imagination of knowledgeable individuals in a much-needed direction.

As a team converges on a decision—and especially when the leader tips her hand—public doubts about the wisdom of the planned move are gradually suppressed and eventually come to be treated as evidence of flawed loyalty to the team and its leaders. The suppression of doubt contributes to overconfidence in a group where only supporters of the decision have a voice and does not provide complete protection against nasty surprises, but it goes some way toward reducing the damage of plans that are subject to the biases of WY SIATI and uncritical optimism.

Speaking of Optimism

“They have an illusion of control. They seriously underestimate the obstacles.”

“They seem to suffer from an acute case of competitor neglect.”

"This is a case of overconfidence. They seem to believe they know more than they actually do know."

"We should conduct a premortem session. Someone may come up with a threat we have neglected."