



Capital allocation: How to recognize bias in your decision-making

Whether launching a new product, investing in equipment, or weighing the merits of an acquisition, CFOs typically rely on their capital planning process to help shape these high-stakes decisions. Shareholders, creditors, and employees alike expect management to take this obligation seriously, and get it right consistently.

A look at the S&P 500 suggests just how difficult it can be to consistently drive positive results, however. Take one measure, return on invested capital (ROIC). In a Deloitte study, neither the amount of capital expenditures (as a percentage

of revenue) nor the growth in capital expenditure demonstrated any kind of meaningful correlation with ROIC.¹ And given such uncertainty, it may not be surprising that more than 60% of finance executives in a different study say they are not confident in their organization's ability to optimally allocate capital.²

Why is this? On paper, it seems practical enough for everyone throughout the organization to support the goals and priorities set at the top. However, behavioral science, and possibly your own experience, suggest it's not always that simple. Individuals may be overly optimistic

about certain courses of action, rely too much on specific pieces of information, or simply interpret the objective through too narrow a lens.

Within the behavioral science field, these are referred to as *cognitive biases*, specifically the *optimism bias*, *expert bias*, and *narrow framing*, respectively. >

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While extensively covered within the academic literature, these biases are typically not as salient in matters of capital planning.³ Yet, the evidence suggests they may be no less prevalent. And in this issue of *CFO Insights*—the first installment of a two-part discussion on capital allocation*—we'll dissect the attributes that can help identify these biases and highlight how they can manifest throughout the capital planning processes.

Choreographing the optimism bias, expert bias, and narrow framing

Biases can arise throughout many areas of daily life. From how we choose a retirement plan to picking out jams at the grocery store, we often make unconscious, suboptimal decisions.⁴ Capital planning decisions may be no different.

From the original Nobel Prize-winning work of psychologists Amos Tversky and Daniel Kahneman to more recent findings, more than 80 different cognitive biases have been identified over the last 40 years.⁵ Of these, three common biases seem to stand out as likely to wreak havoc on capital decision-making: the *optimism bias*, *expert bias*, and *narrow framing*.⁶ Here's an in-depth look at how they typically work:

The optimism bias

Optimism, while not categorically bad, is often closely tied to overconfidence. Known to minimize uncertainty, overconfidence can lead to perilous outcomes. In his book, *Thinking, Fast and Slow*, Daniel Kahneman recounts a multiyear study involving autopsy results. Physicians surveyed said they were “completely certain” with their diagnosis while the patient was alive, but autopsies contradicted those diagnoses 40% of the time.⁷

Another long-term study asked CFOs to predict the performance of a stock market index fund, along with their own company's prospects. When asked to give an 80% confidence interval (that is, provide a range of possible outcomes they are 80% certain results will fall within), only 33% of the results actually fell within their estimates—and most miscalculated in an overly optimistic manner.⁸ Interestingly, the same CFOs who misjudged the market, misjudged



the return on investment (ROI) of their own projects by a similar magnitude.⁹

Kahneman explains that people defer to overconfident and optimistic predictions due to our distaste for uncertainty. If the CFOs provided a broader, vaguer estimate, they may fear perceptions that they weren't up to the task. This, in turn, could lead to decision paralysis or could make them appear inept or unqualified to do the job. Most people accept that overconfidence and optimism exist. It is far more difficult, however, to identify these behaviors *while they are happening*. Here are two methods to consider using to determine if excessive optimism exists:

- **Take a survey of past performance.** Like the CFO study, compare past projections to reality. If the estimates were systematically more optimistic, there may be evidence of excessive optimism. But make sure you avoid letting hindsight dictate this analysis too much. In the case of individual performance, for example, if a manager did exceedingly well in the past, leaders should not assume he or she will achieve the same level of performance in the future.
- **Focus on data, not just narratives, to make decisions.** When we have little information to go on, it can be easier to manufacture a coherent, overly positive story to fill in the blanks. But those

decisions rarely end up to be solid. In professional sports, many have cited “intangibles” as the reason they picked a player—only to regret the decision when the data suggests these intangibles aren't leading to victories. When data is scarce or ambiguous, it can be easier for the mind to form a more confident narrative based upon anecdotal evidence. But stories shouldn't be enough to go on when making multimillion-dollar capital decisions.

Expert bias

Often, people are guiltiest of believing and acting upon overly optimistic views when they derive from “experts.” This could be your company's lead software engineer, the vice president of sales who knows “what the customer really wants,” or even the CEO. When we simply accept an expert's opinion, or even our own, versus seeking out additional information from a variety of sources, we fall victim to the expert bias.

How bad can it get? In many cases, the experts may be no better than random chance. In his book, *Expert Political Judgment*, Philip Tetlock analyzed more than 20 years of political pundits' predictions on a variety of policy and economic outcomes.¹⁰ When tracked, these experts performed about as well as they would had they randomly guessed. Even more disturbing, with greater fame usually comes greater inaccuracy.

One could argue that there is a big difference between heeding the advice of a TV personality and an analyst who is augmenting their predictions with data. But following even the best expert can also be dangerous.¹¹ Just because someone was the most accurate in the past does not mean we should only rely on his or her opinions going forward.

Illustrating this point, one study asked MBA students to predict six economic indicators by either relying solely on the most accurate economist based on past performance or an average of three to six well-respected economists' forecasts.¹² While 80% of the students chose to rely on the single top performer, the average estimates routinely performed better. This showed that when making decisions, relying on a number of informed opinions can be better than chasing a top expert's past performance.

These studies, along with the conversation on optimism, suggest two things: First, a display of confidence does not necessarily translate into better results. Instead, it may signal a degree of ignorance (or arrogance). Second, a good group of people making a decision usually outweighs relying on the "best" person to make the decision.

Narrow framing

Another common behavior people often exhibit when making decisions is engaging in *narrow framing*. Here, people isolate problems, regardless of how broadly defined, into smaller, individual decisions. So rather than aggregating decisions into a portfolio of interdependent choices, they tackle them individually. At face value, this may sound intuitive. In practice, though, it can lead to the mismanagement of risk and an isolated view of problems.

Consider this hypothetical question from Tversky and Kahneman:¹³

Which would you prefer?

1. A guaranteed \$240 reward or
2. A 25% chance to win a \$1,000 reward with a 75% chance to win \$0.

In this case, more than 80% of respondents chose the sure \$240. Though, simple utility

Figure 1. A summary of capital decision biases

| Capital decision bias | What it typically looks like | How to possibly address it |
|-----------------------|---|--|
| Optimism bias | <ul style="list-style-type: none"> • Overconfidence in estimates • Narrow range of prediction • Opting for narratives over data points | <ul style="list-style-type: none"> • Track predictions against reality • Remove anecdotal "proof points" from the decision-making process |
| Expert bias | <ul style="list-style-type: none"> • Relying on a single decision maker • "Chasing" a person's or group's past performance | <ul style="list-style-type: none"> • Pool recommendations from a diverse set of qualified individuals • Do not chase past performance |
| Narrow framing | <ul style="list-style-type: none"> • Focusing on a single attribute to make the decision | <ul style="list-style-type: none"> • Determine a portfolio of relevant metrics • Make capital decisions in aggregate rather than on a case-by-case basis |

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maximization would suggest that option B has a higher expected value of \$250 (25% x \$1,000 = \$250).

They offer another hypothetical question involving losses:

Which would you prefer?

1. A sure loss of \$750 or
2. A 75% chance to lose \$1,000 with a 25% chance to lose nothing.


When a clear loss is at stake, 87% preferred the second option, even though both offered the same expected value of losing \$750. Reframing the problem as a loss led to more risk-seeking behavior. So why explore these dry hypotheticals? It shows that in some cases, people are risk-averse ("Give me the sure \$240") and in others, they are risk-seeking. ("I would rather have a 25% chance to lose nothing than definitely lose \$750.")

If these risks are not weighed and measured as a total portfolio, our views and preferences may vary as well. In another essay, Daniel Kahneman and Dan Lovallo describe the dangers of narrow framing in a corporate scenario.¹⁴ Picture two groups submitting capital planning proposals: one is in a bad position and has to choose between a guaranteed loss or the high likelihood of an even larger loss. Now consider a different group in the same company. This group has done well historically and can stay the course and make the same amount of money or take a marginal risk to make even more. If looked at in isolation, the company will

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most likely be risk-seeking for the first group and risk-averse for the second. Instead, this organization would be better off aggregating both options and analyzing the problem set as a portfolio of risk—rather than one of isolation.

With this in mind, it is clear that many different factors can influence our frame of view in isolation. Like the chasing the expert discussion, it's feasible a high performer who submits a capital project proposal with excessive risk factors could be given too much leeway because of his or her status. Alternatively, hindsight can lead decision makers to view a new project too skeptically—even if it originated from a sound strategy.

Kahneman and Lovallo assert that the best way to mitigate narrow framing is twofold: First, organizations should utilize a process that groups together problems that, on the surface, may appear to be different. Second, this process must also include an evaluation element and use quality metrics that properly align with the organization's goals.¹⁵ 

Stripping away biases

No matter the organization, biases will likely influence capital decision-making if left unchecked. It seems natural to avoid uncertainty in favor of excessive optimism. Even if we are not making the decision, we frequently put too much weight on the experts' shoulders. And with high-dollar, high-risk decisions, we frequently try to make the decision easier by narrowly framing the problem through a less holistic lens.

Thankfully, there are ways you can use behavioral science techniques to prevent these cognitive biases from negatively

impacting high-stakes decisions. (See Figure 1.) When assessing your own capital decision-making process, ask:

- **How are we submitting proposals?**

To avoid narrow framing and the expert bias, consider seeking capital spending proposals from a diverse set of employees and departments. By broadening your portfolio of submissions, you can decrease the likelihood of only seeing the world through a single lens.

- **How are we assessing proposals?**

Consider replacing catchy narratives with coherent, consistent metrics. Doing so could level the playing field across a

- broad set of proposals and reduce much of the noise throughout the decision-making process.

A financial decision is typically fueled less by the underlying capital and more by the people tasked with driving the decision. With this in mind, before you choose where to spend your capital, determine how you want to make those decisions.

**For more information, including examples from the US Navy and the telecommunications industry, see ["Capital bias: Reducing human error in capital decision-making," Deloitte Insights, November 2017.](#)*

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Endnotes:

1. Deloitte conducted an analysis of the S&P companies over a 20-year period and found no meaningful correlation between capex as a percentage of revenue and ROIC. Nor was there a meaningful correlation between growth in capex as a percentage of revenue and ROIC.
2. More than 60% of finance executives surveyed "are not confident" in their organization's ability to make optimal capital allocation decisions: Deloitte webcast, "Capital expenditure planning: A structured, portfolio approach," May 23, 2013, 1,280 respondents; Deloitte webcast, "Energy management: How an effective strategy can improve your budget and drive value," July 27, 2011.
3. Kenneth A. Kriz, "Cognitive biases in capital budgeting," Wichita State University, accessed May 2, 2017.
4. Ruth Schmidt, *Frozen: Using behavioral design to overcome decision-making paralysis*, Deloitte University Press, October 7, 2016.
5. Timothy Murphy and Mark Cotteleer, *Behavioral strategy to combat choice overload*, Deloitte University Press, December 10, 2015.
6. We should note that many other biases can manifest throughout the capital planning process. We chose these three because we have found them to be especially prevalent in our own work. However, if you want to learn about more biases that can develop throughout the process, we recommend exploring Buster Benson's "Cognitive bias cheat sheet," Better Humans, September 1, 2016.
7. Daniel Kahneman, *Thinking, Fast and Slow* (New York: Farrar, Straus & Giroux, 2011).
8. Noted in Derek M. Pankratz and Michael A. Roberto's "Crossing the mental Rubicon: Don't let decisiveness backfire," *Deloitte Review* 18, January 25, 2016. The original cited study is Itzhak Ben-David, John Graham, and Campbell Harvey, "Managerial miscalibration," *Quarterly Journal of Economics* 128, no. 4 (2013): pp. 1,547-84.
9. Putting a point of emphasis on the optimism bias, CFOs who also had a chance to revise based on past performance would lower their "worst case" scenario estimates in the face of poor performance, but would hold steady on their "best case" scenario. This means they would be willing to expand their confidence band but not minimize their optimism.
10. Philip E. Tetlock, *Expert Political Judgment: How Good Is It? How Can We Know?* (Princeton, NJ: Princeton University Press, 2006).
11. Reid Hastie and Cass Sunstein, *Wiser: Getting Beyond Groupthink to Make Groups Smarter* (Boston: Harvard Business School Publishing, 2015).
12. Albert E. Mannes, Jack B. Soll, and Richard P. Larrick, "The wisdom of small crowds," The Wharton School, University of Pennsylvania.
13. Amos Tversky and Daniel Kahneman, "Rational choice and framing of decisions," *Journal of Business* 59, no. 4 (1986).
14. Daniel Kahneman and Dan Lovallo, "Timid choices and bold forecasts: A cognitive perspective on risk taking," *Management Science* 39, no. 1, January 1993.
15. Lars Lefgren, Brennan Platt, and Joseph Price, "Sticking with what (barely) worked: A test of outcome bias," *Management Science* 61, no. 5 (2014).

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