# Behavioral Economics

## Understanding your unconscious to become a better investor

2023

***Contributors:***

Bryan Shipley, CFA, CAIA; Dave Janec, FRM;
Jillian Perkins

# Behavioral Economics: Understanding your unconscious to become a better investor

## Table of Contents


Introduction ..... page 3

Why do people make irrational decisions? ..... page 4

Introducing heuristics ..... page 6

- Anchoring & adjustment ..... page 6
- Availability ..... page 7
- Affect ..... page 8
- Bandwagon (groupthink) ..... page 9
- Confirmation bias ..... page 10
- Endowment effect & loss aversion ..... page 11
- Framing effect ..... page 12
- Gambler’s fallacy ..... page 12
- Hyperbolic discounting ..... page 13
- Mental accounting ..... page 14
- Overconfidence ..... page 15
- Representative heuristic ..... page 16
- Status quo bias ..... page 16
- Sunk cost fallacy ..... page 17

Why discipline in investing is critical ..... page 18

Applying discipline to your investment strategy ..... page 19

Conclusion ..... page 20

Endnotes ..... page 22

# Introduction

Traditional economic theories hinge on what is called "Economic Man," a hypothetical individual representing a consumer who makes economic choices based on rational self interest. "Economic Man" will always maximize his own utility when choosing between different options, and it is this assumption which forms the basis for many of the postulates of traditional economics. However, over the last couple of decades, economists have realized that "Economic Man" is a fiction. The assumption that "Economic Man" is able to take all of the available information, weigh it rationally, and then make the most logical decision based on his self interest, is at its core flawed. As it turns out, most of us don't have access to all available information, nor time to absorb and weigh it all, nor — perhaps most importantly — fully rational decision-making processes. This was called by economist and psychologist Herbert A. Simon *bounded rationality*, in which he suggested that as humans, we essentially do our best, but are bounded by time and resources and end up making satisfactory decisions rather than optimal ones.

This works in our favor for a great many decisions. When selecting your coffee drink, for instance, you don't want to spend time weighing all the information, examining all the prices, and learning about nutritional content. You want to make a snap decision based on your general knowledge of what's available, what you have enjoyed in the past, and what you feel like drinking. Lots of daily decisions fall into this category, and human mental processes have optimized to be able to rely on mental shortcuts that can help one make those decisions quickly. But those same shortcuts can short circuit the more serious decisions — like financial decision-making — that we face.

**"BEHAVIORAL ECONOMICS IS A FIELD THAT MOVES BEYOND THE RATIONAL-ACTOR MODEL OF STANDARD ECONOMIC THEORY. FOR MANY YEARS, ECONOMIC THEORY POSITED THAT PEOPLE ARE OPTIMAL DECISION-MAKING MACHINES; THAT WE ARE EMOTIONLESS, SELFISH, AND DON'T MAKE MISTAKES. BEHAVIORAL ECONOMICS STEPS IN WHERE THAT MODEL LEAVES OFF AND SAYS, ACTUALLY, WE CAN BE BETTER AT DESCRIBING HUMAN NATURE."**

*- Katy Milkman, Wharton, 2023*

Behavioral economists have been studying human decision making to better understand the mental shortcuts — or heuristics — we use, as well as ways our emotions can warp our thinking, so they can anticipate where people often fall short of rational judgment. Knowing the bounds of our rationality can help us overcome them.

Many of the greatest investment mistakes occur due to investors acting from emotions or irrational thinking. Those investors who understand behavioral economics and how to counter our human tendency toward illogic are better equipped to avoid those mistakes. Volatility is an inherent aspect of investing, and can be an emotional experience. Recognizing that and working with that understanding makes us able to be better investors.

In this paper, we'll examine some of the findings of behavioral economists, looking at the heuristics and emotional influences behind some of our most inexplicable decision-making, as well as strategies behavioral economists have suggested for countering irrational decision-making and behavioral changes that can improve our decision-making logic and processes.

It's important to recognize that economics and social psychology, like other disciplines, are evolving as new information becomes available and new ideas take hold. Behavioral economics offers us some markers and guideposts for how to improve decision-making, but is an imperfect framework. All people are individuals and respond differently to different inputs, and all situations are unique.

> **"WHAT WE KEEP FINDING IS THAT MUCH OF HOW THE MIND OPERATES IS HIDDEN TO US, AND THAT IT SHAPES OUR EXPERIENCE AND BEHAVIOR IN WAYS THAT WE'RE NOT THE LEAST BIT AWARE OF. THE EXCITING PART IS THAT THROUGH OUR EXPERIMENTS, WE'RE BEGINNING TO DETECT THESE UNCONSCIOUS MECHANISMS, TO SEE THESE INVISIBLE PATTERNS IN OUR MIND."**
>
> - Bargh, 2017

## Why do people make irrational decisions?

The human brain is a remarkable organ that, along with our nervous system, gives rise to a deeply complex mind. Sigmund Freud is known for having recognized that the part of the mind that is conscious is minuscule relative to the unconscious processes that run in the background. Once you learn to walk or play the piano or drive, you no longer have to think about the detailed steps involved in doing those activities — they happen more or less automatically. You know how to balance your weight or where to put your fingers or how much pressure to apply to the brakes without having to consider them consciously.

You might think of it as a set of programs. Some programs we consciously create, whereas other programs derive from millions of years of human evolution. Many of them are constructed in our early childhood. Those programs help you navigate a world without becoming

overwhelmed with information and choices. The human brain can process up to 11 million bits of information per second, but only 40 to 120 of them in the conscious mind.

The value of having unconscious programs is that they allow us to maneuver through a complex life experience without having to consciously direct all of our actions and choices. On a physical level, we are able to breathe, digest food, access motor skills, and heal from injury with no conscious attention. On a higher level, we are able to play musical instruments, engage in sporting activities, drive, and use tools without giving it much thought. And on a decision-making level, your unconscious can process complex information so that you are able to instantaneously choose which Starbucks drink you want, whether you are interested in a romantic partner, or what you want to wear today without thinking too hard about it.

Many researchers suggest that much of the time, those unconscious processes are serving us well in decision-making. Social psychologist Maarten Bos suggests that "our conscious mind is pretty good at following rules, but our unconscious mind — our ability to 'think without attention' — can handle a larger amount of information." In his research at Harvard Medical School, he found that "Lots of processes are automated and therefore very efficient. Our research shows thinking and deciding can also be left successfully to the unconscious mind." (*Working Knowledge*, 2012) Research on unconscious decision making in *Science* notes that "contrary to conventional wisdom, it is not always advantageous to engage in thorough conscious deliberation before choosing. On the basis of recent insights into the characteristics of conscious and unconscious thought, we tested the hypothesis that simple choices (such as between different towels or different sets of oven mitts) indeed produce better results after conscious thought, but that choices in complex matters (such as between different houses or different cars) should be left to unconscious thought." (*Science*, 2006)

**"BOTH CONSCIOUS AND UNCONSCIOUS THOUGHT HAVE STRENGTHS AND WEAKNESSES. THERE ARE DECISIONS WHERE WE BELIEVE *CONSCIOUS* THOUGHT OUTPERFORMS UNCONSCIOUS THOUGHT. FOR EXAMPLE, WHEN A DECISION REQUIRES APPLICATION OF VERY STRICT, MATHEMATICAL RULES, WE HYPOTHESIZE THAT CONSCIOUS THOUGHT IS BENEFICIAL. BUT WHEN IT COMES TO INTEGRATING A LARGE AMOUNT OF INFORMATION, WE THINK *UNCONSCIOUS* THOUGHT, WHICH GIVES ROUGHER ESTIMATES, IS MORE BENEFICIAL."**

- *Working Knowledge*, 2012

**"THE PIONEER OF BEHAVIORAL ECONOMISTS WAS HERBERT SIMON, WHO DEVELOPED THE NOTION OF BOUNDED RATIONALITY, NAMELY THAT AN INDIVIDUAL IS RATIONAL, BUT THAT THEIR ABILITY TO COMPUTE, ASSESS, AND DECIDE ARE LIMITED, ESPECIALLY GIVEN CONSTRAINTS ON TIME TO MAKE A DECISION. THEREFORE, PEOPLE DEVELOP AD HOC DECISION RULES THAT OFTENTIMES PERFORM QUITE WELL."**

- Zilberman, 2019

The issue of irrational decision-making in behavioral economics arises when we are faced with complex decisions that are also mathematical and rational. It may seem as if sleeping on it or going with one's gut is effective, when in fact, in these cases, your unconscious can be deeply misleading. Behavioral scientists have focused attention on "heuristics," or cognitive shortcuts, that shape the unconscious processes behind our decisions. Understanding some of the most common heuristics can move us toward balancing those tendencies with our conscious processes when making investment decisions.

# Introducing heuristics

## ANCHORING & ADJUSTMENT

Imagine this scenario: you walk into an upscale shop and browse the shirts. Most of them cost well over $200, but you come across one that is on sale for $50. Pleased by the find, you snatch it up, feeling you've gotten a great deal. A couple of days later, on another outing, you come across the exact same shirt, but this time it is at an outlet store. It's $50 here too, but on a rack with shirts that are mostly priced under $25. Would you still feel like you got a great deal?

This is an example of anchoring, in which your perception of value is understood or judged relative to other factors, often unrelated. Your mind is preoccupied with a particular value, and new choices are made within the context of the previous information rather than adjusting the context.

Amos Tversky and Daniel Kahneman, who authored one of the seminal papers on behavioral economics, "Judgment Under Certainty: Heuristics and Biases (1974)" conducted an experiment in which they asked participants to estimate the percentage of African countries in the United Nations. But prior to estimating, each participant spun a wheel of fortune that gave them a random number. They found that the random number affected the participants' guesses — those who received the lower random number of ten estimated a median of 25%, whereas those who received an initial number of 65 estimated a median of 45%.

In a similar experiment, they asked some individuals to estimate 8×7×6×5×4×3×2×1 while others were asked to estimate 1×2×3×4×5×6×7×8. Of course, the two problems have the same answer, but the median estimate of the first was 2,250 while the median estimate of the second problem was 512.

The anchoring bias can affect financial decisions in a number of ways. When considering the purchase of a stock, if you were told the current price was twice as high as it was a week ago, how likely would you be to purchase that stock? What if you were told it was half the price as it was a week ago? Neither piece of information is necessarily relevant, depending on other factors, but would be highly likely to color your perception of the purchase. Every salesperson understands that beginning negotiations with a high starting price is likely to yield a higher final price, as the opening bid serves as the anchor or reference point.

Pulling yourself out of your current context and working to examine information absent surrounding factors can help counter anchoring. Look for any values you may be using to anchor your perceptions in order to bring those into your awareness, rather than acting as a hidden influence.

## AVAILABILITY

Rarely do we have all of the information nor weigh all of the variables when making complex decisions. But neither do we tend to seek out the most relevant and pertinent information on which to base our decisions. Instead, we tend to use whatever information is easily and immediately available to us.

> **"THAT EASE OF ACCESSIBILITY COULD BE DUE TO THE FACT THAT A SPECIFIC PIECE OF INFORMATION IS THE MOST RECENT, OR MAYBE BECAUSE IT IS THE MOST SALIENT IN MEMORY. INSTEAD OF RELYING ON FACTUAL DATA, OUR THOUGHT PROCESSES ARE AFFECTED BY THE INFORMATION THAT COMES TO MIND THE EASIEST."**
>
> - Cornell, 2022

People are more likely to purchase brands of products for which they've recently seen advertising, bosses are more likely to give a good performance review to an employee who has recently had a major success (regardless of the rest of the year's performance), and jurors will weigh more heavily evidence that is shocking or graphic because it is more easily recalled. Availability is why cramming for tests works, bold advertising is effective, and media exposure can influence our perceptions.

Consider a home buyer who recently saw an exposé about hidden mold infestation. They may put a good deal more time and resources toward mold inspections while ignoring more likely issues such as leaky roofs and outdated plumbing. Investors are likely to draw upon recent experience and events — or information that stands out because it is extreme or drastic.

Balancing the availability heuristic requires seeking out accurate and thorough information to guide your decision. Create a deliberate fact-finding process. Some behavioral scientists recommend a strategy called "red-teaming," a group strategy that involves nominating one member of the group to challenge the majority opinion, regardless of their own

personal opinion. This strategy, also effective in countering groupthink, can help uncover additional information or perspectives that may not be immediately apparent.

## AFFECT

The affect heuristic is simply another way of saying that individuals are often highly influenced by their emotions or positive and/or negative associations when making decisions. You might call it the "gut instinct" heuristic. The affect heuristic, borne from intuition, can be efficient and adaptive as your mind accesses volumes of integrated information and delivers a rapid response. But it can mislead you in moments that require more careful thought.

Assessment of risk and benefit is one area where researchers have found that the affect heuristic plays a significant role. People who have experienced traumatic events will often overestimate the risk of similar events occurring in the future and take drastic steps to avoid that risk. Researchers found that investors who were invested during the 2008 financial crisis carried forward an elevated perception of risk that affected their later investment decisions.

> **"BY CONSULTING THE AFFECTIVE IMPRESSION WITH WHICH SOMETHING IS TAGGED INSTEAD OF DOING LABORIOUS CALCULATIONS AND UTILITY MAXIMIZATIONS, ONE CAN SAVE TIME AND EFFORT THAT WORKS SUFFICIENTLY WELL IN MANY SITUATIONS."**
>
> - Frontiers in Psychology, 2020

Investors may also employ the affect heuristic when stock-picking, selecting companies they favor or have positive feelings toward, rather than using objective criteria. Companies will go to great lengths to control investor and consumer perception and generate positive associations.

Investors can use the affect heuristic as a helpful guide without letting it take the place of careful and objective analysis.

## BANDWAGON (GROUPTHINK)

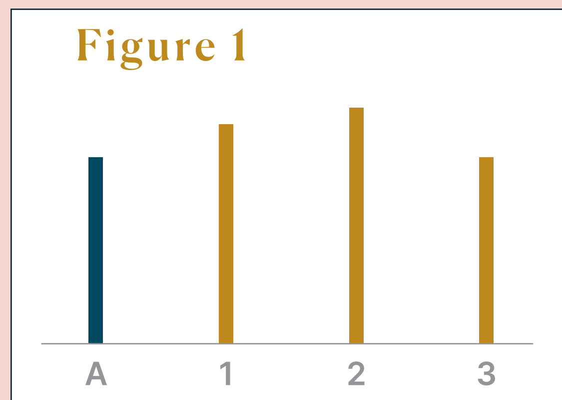
In 1956, social psychologist Solomon Asch conducted an experiment — described in detail below — in which he asked subjects to answer a simple question with an obvious answer. The subject was placed into a group where, unbeknownst to them, the other group members were confederates in the experiment. When the other group members answered (aloud) the question incorrectly, the subject in most cases also answered the question incorrectly, conforming to the group rather than providing the clearly obvious correct answer. The experiment demonstrated that the drive toward group conformity often overrides objective reason and critical thinking. As unlikely as this seems, it bears out repeatedly in action. Human beings are social creatures, and don't like to be out of agreement with their peers.

Subtle pressures to conform may result in self-censorship, wherein individuals may refrain from expressing an opinion. But groups often become unaware of the bandwagon effect, believing the majority view is correct by virtue of being unanimous and ignoring or dismissing any information that runs counter to it. Some groups may even negate factual information that doesn't support their views, or take the position that loyalty to the group is the highest good.

The drive toward conformity has served human evolution by allowing people to survive and thrive in groups, but can threaten your ability to use individual critical thinking in decision-making. Becoming comfortable with — or even inviting — healthy conflict can innoculate you against succumbing to the bandwagon effect. Using the red-team strategy of appointing a "devil's advocate" or seeking outside expertise can also be helpful.

### TENDENCY TO CONFORM

A famous experiment conducted in 1956 by social psychologist Solomon Asch demonstrates the power of the tendency toward social conformity. Subjects were placed into groups of seven to nine people in which the other members were, unbeknownst to the subject, assistants to the experimenters; these confederates were assigned specific roles.




In the experiment, the groups were shown a picture (similar to Figure 1 to the right) and were asked, "Which line — 1, 2, or 3 — is the same length as line A?" In unscripted trials, all subjects chose the correct line: line 3. But in some trials, the confederates were directed to give convincingly wrong answers, and in these trials, 75 percent of the subjects agreed with the confederates and said that line 1, obviously an incorrect answer, was equal to line A in at least one trial. They were convinced to give the wrong answer in the face of obvious evidence to the contrary due to the social pressure to conform.

*~ Wood, 2006*

## CONFIRMATION BIAS

Everyone holds preconceptions. Confirmation bias suggests that people will work hard to mentally confirm their existing beliefs, viewing information through the lens that interprets it favorably relative to those beliefs, giving more weight to evidence that supports their beliefs while ignoring or undervaluing evidence that runs contrary to those beliefs. The more emotional weight a belief carries, the more strongly confirmation bias is likely to exert its influence.

In a Stanford University study, participants were asked to respond to two studies on the subject of capital punishment; one providing supportive statistics and the other against (both fictitious and designed to be equally compelling). The students rated the studies based on their own prevailing attitudes about capital punishment; those who had previously been pro-capital punishment rated the paper supporting it favorably and the other poorly. The other group rated the studies in the opposite manner. None of the students changed their views at the end of the study period; in fact, they were even more adamant about their position after the experiment.

Confirmation bias can inhibit an individual's ability to learn or assess new information, and can even affect memory, as individuals exhibit selective recall in favor of previously held assumptions. Confirmation bias is one of the most challenging heuristics to overcome: attempts to present alternative information often backfire, as the individual simply digs in their heels, assigning low credibility and discounting anything that conflicts with their beliefs.

Because investing relies upon the analysis and integration of lots of different types of data and information, it's very easy for confirmation bias to play a role as investors develop and execute

their strategy. Ironically, as one gains greater skills and successes, the opportunities and propensity for confirmation bias increase.

Overcoming confirmation bias requires a willingness to become deeply self-aware, examining one's own beliefs and perspectives and being able to hold them loosely as you explore information. F. Scott Fitgerald remarks, "the truest sign of intelligence is the ability to entertain two contradictory ideas simultaneously." To get beyond confirmation bias demands a readiness to change one's mind and admit error. The scientific method is a tremendous tool for countering confirmation bias, with its focus on objective observation, seeking to falsify hypotheses, and subjecting theories to constant testing and revision.

## ENDOWMENT EFFECT & LOSS AVERSION

One of the most well-known behavioral economics principles is that of risk aversion, which describes the phenomenon whereby people feel the pain of a loss more than the pleasure of an equivalent gain. The endowment effect is another side of this principle; people endow objects that they own with additional value simply by virtue of their ownership. In other words, the price people are willing to pay for an object is lower than the price at which they would sell that object if they already owned it.

In a Cornell University experiment, student subjects were assigned to one of three groups: sellers, buyers, and choosers. The sellers were given mugs and then asked the price at which they'd be willing to sell the mugs. The buyers were asked how much they would be willing to pay for a mug, and the choosers were asked to choose, at each price level, whether they would prefer the mug or the money. At the end of the experiment, the sellers' median price to sell the mug was $7.12, the buyers' median price to buy the mug was $2.87, and the choosers selected the mug beginning at a median price of $3.12. In other words, the sellers would rather have the mug than $7, whereas the buyers and choosers would only prefer the mug to money if it was under $3. (Kahneman, Knetsch, Thaler, 1991)

This suggests that people build an attachment to things that they own, assigning greater value to them. The phenomenon applies whether the thing is a house or a car or a stock. This can go hand-in-hand with loss aversion, in which the suffering of losing something one owns is worse than the positive feelings that come with gaining something of equal value. For example, the sellers in the above experiment wouldn't be willing to part with their item unless at a rather high price. The buyers, on the other hand, only felt the mug was worth a few dollars.

There is an additional implication that accompanies this effect, which is that people experience opportunity costs differently than

they do actual out-of-pocket costs, with an actual cost being perceived as greater than the cost of a missed opportunity even when the nominal amount is the same.

For investors, the endowment effect and loss aversion can influence portfolio buying and selling decisions. Setting a clear investment policy and/or enlisting outside expertise can help to counter these biases.

## FRAMING EFFECT

In a 1981 study, two groups of subjects were presented with two options for dealing with an outbreak of a disease that would likely kill 600 people. The first group was told that option A would save 200 people, while option B has a 1/3 probability of saving 600 people and a 2/3 probability noone would be saved. As expected, most (72%) chose option A, with greater certainty of saving at least some lives. The second group was offered the same options, but presented as option C would result in 400 deaths and option D has a 1/3 probability that noone would die and a 2/3 probability that everyone would die. This second group overwhelmingly (78%) chose option D, opposite the first group. (Tversky, Kahneman, 1981)

Mental biases come into play depending on how information is presented. Would you rather buy a detergent that "kills 95% of germs" or one that leaves 5% of germs alive? Would you prefer your bank provide a free account that charges a fee for a low balance, or charge for the account but offer a discount for keeping a minimum balance? The formulation of a question or idea greatly influences how people respond to it. Most people prefer positive framing; for instance, polls suggest that a policy described as "increasing the employment rate" will generally garner more support than one that "decreases the unemployment rate," even if the end result is the same. Research has demonstrated that people become more susceptible to the framing effect with age.

> **"ACCORDING TO [PROSPECT] THEORY, A LOSS IS PERCEIVED AS MORE SIGNIFICANT, AND THEREFORE MORE WORTHY OF AVOIDING, THAN AN EQUIVALENT GAIN. A SURE GAIN IS PREFERRED TO A PROBABLE ONE, AND A PROBABLE LOSS IS PREFERRED TO A SURE LOSS... THE WAY SOMETHING IS FRAMED CAN INFLUENCE OUR CERTAINTY THAT IT WILL BRING EITHER GAIN OR LOSS. THIS IS WHY WE FIND IT ATTRACTIVE WHEN THE POSITIVE FEATURES OF AN OPTION ARE HIGHLIGHTED INSTEAD OF THE NEGATIVE ONES"**
>
> - The Decision Lab

The framing effect is important for investors to know because investors face a fiercely competitive industry and landscape, with plenty of options vying for supremacy. Good sales executives and client service professionals understand this concept — if not by name then certainly just through experience — and will make use of its influence.

Countering the framing effect is a matter of paying close attention to how things are presented and looking at prospective options from different angles before making a decision. Avoiding impulsive decision-making can help, as the more time you have to consider options, the more time you have to examine your choices from different perspectives.

## GAMBLER'S FALLACY

If you flip a coin and get tails ten times in a row, what are the chances you will get tails on the next flip? The answer, of course, is 50%, though that flies in the face of our intuition, which insists that the chances must be lower since it would be the 11th time in a row. This is the gambler's fallacy, in which people believe that future probabilities are affected by past events. It is a very human attempt to apply patterns where there are none. Roulette gamblers who see the roulette ball fall on black five times in a row will feel that the spin is now "due" for a red and will be more likely to bet in that direction. But in reality, the roulette

> **“CHANCE IS COMMONLY VIEWED AS A SELF-CORRECTING PROCESS IN WHICH A DEVIATION IN ONE DIRECTION INDUCES A DEVIATION IN THE OPPOSITE DIRECTION TO RESTORE THE EQUILIBRIUM. IN FACT, DEVIATIONS ARE NOT ‘CORRECTED’ AS A CHANCE PROCESS UNFOLDS, THEY ARE MERELY DILUTED”**
>
> - Kahneman, Slovic, Tversky, 1982

wheel has no memory, and each spin has exactly the same probability of landing on red as every other spin. That the number of reds will tend to even out over a very large number of spins does not mean that will play itself out in any given small sample size.

This fallacy is so common that nearly all investment materials are required to caution investors that “past performance is not a guarantee of future results.” Research has shown that investors often make investment purchases based on the past performance of fund managers, even though “the data suggest that performance of mutual fund managers is serially uncorrelated.” (Croson & Sundali, 2005)

Historical data can be very useful to investors, offering context, building perspective, and informing choices. But it’s important to keep in mind that historical data doesn’t predict the future, and that investment decisions should focus on a forward-looking view.

## HYPERBOLIC DISCOUNTING

Would you rather have $100 today or $150 a year from now? Although the second option represents a remarkable 50% return, many people would choose the first. This is because people assign greater value to rewards in the present than to rewards in the future. Called hyperbolic discounting, in theory it’s a rational concept, as future rewards bear the risk that they will not materialize or that something will happen between now and then. Discounting the future reward is your mind’s way of accounting

for that risk. But rarely is the calculation a rational or logical one; we tend to underestimate the value of the future reward, and the further it is in the future, the more we devalue it. (If plotted on a chart, the shape of the discount over time forms a hyperbola, hence the name hyperbolic discounting.)

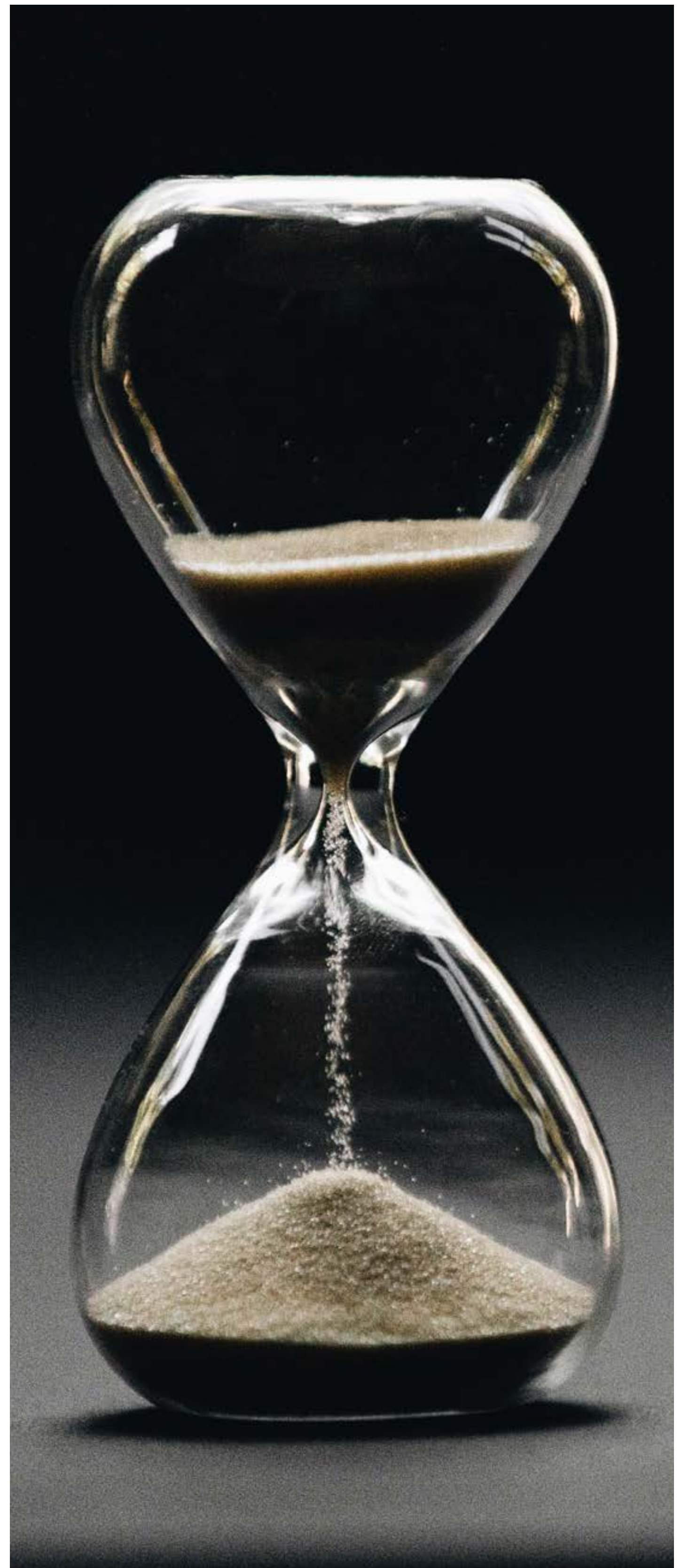
Hyperbolic discounting can become an obstacle when planning for the future. American workers have been very poor at saving for retirement, for instance, largely as a result of hyperbolic discounting. Despite the tax advantages and potential for investment return, it can be difficult to forgo the benefit of immediate payment versus the idea of a deferred reward.

Credit cards rely on hyperbolic discounting, as consumers seek instant gratification, while discounting the future payment.

Hyperbolic discounting can contribute to faulty decision-making in investing if investors are chasing current gains at the expense of long-term returns. Since investing by its nature involves deferring reward to the future, it's helpful to understand the hyperbolic discounting impulse and focus on examining your choices rationally.

## MENTAL ACCOUNTING

How do you spend your tax refund? Do you do something special with your annual bonus outside your regular budgeting/planning process? These are both examples of mental accounting, in which you place different amounts of money into different mental buckets and track your financial activity in those buckets separately. In using mental accounting, people will often assign different values to different buckets despite the fact that money is fungible — one dollar is exactly the same as the next. This sets up an irrational decision-making process, such as when an individual may justify a splurge if they



receive an unexpected windfall, whether or not they can actually afford it based on their overall budget.

Some investors use mental accounting when allocating assets to risky investments. By setting aside a designated amount they feel comfortable losing, it can ease the anxiety that may accompany significant risk-taking. There's nothing wrong with setting aside amounts outside one's regular investment strategy to experiment with, but investors shouldn't let that absorb their risk tolerance. Taking some risk in an investment portfolio is critical in order to enhance the potential for long-term return, and a successful investment strategy should incorporate as much risk as the investor is willing to take on.

## OVERCONFIDENCE

Sixty-five percent of Americans believe they are above average in intelligence. (Heck, Simons, Chabris, 2018) According to AAA, about 73% of Americans consider themselves to be a better-than-average driver. (Aguilar, 2021) By definition, both of those in reality can only equal 50%; the reason for the overestimation is overconfidence. Human beings by nature overestimate their skills, knowledge, and abilities.

**ACCORDING TO THE CERULLI ASSOCIATES "BEFI BAROMETER" 2021 SURVEY, 66% OF ADVISORS SAY MILLENNIAL CLIENTS EXHIBIT OVERCONFIDENCE BIAS, WHILE 34% AND 21% SAY GENERATION XERS AND BABY BOOMERS ARE OVERCONFIDENT, RESPECTIVELY.**

\- Aguilar, 2021

It's difficult to be aware of our own limitations, and people want to think that they are good at what they are doing, often to the detriment of the outcome. Overconfidence poses a danger to investors who may take outsized risks, overestimate their tolerance for risk, or eschew professional assistance. Overconfidence may also result in being less willing to accept new information or listen to conflicting opinions.

Choice supportive bias is a related heuristic, in which people tend to remember their past choices positively, even if that means distorting their memory to do so. Humans don't want to imagine that they've made a poor choice, so they will downplay any negative consequences of past choices. The failure to examine and analyze the reality of past decisions can affect future decision-making. At the same time, people generally have no trouble taking credit for the positive outcomes of choices!

## REPRESENTATIVE HEURISTIC

Imagine you are given a photo of two men; one is wearing a tweed jacket and glasses and carrying a book, while the other is dressed in rugged jeans and work clothes. You are asked to identify which is a construction worker and which is a college professor. Without any actual information about the two individuals, most people would pinpoint the first as a college professor. This is due to the representative heuristic, in which people assume that things that appear to be similar probably fit into the same category. Stereotyping is a form of the representative heuristic. Humans create mental representations to order the world, and automatically match their experience to those representations.

Like other heuristics, this helps people make quick assessments and decisions by facilely categorizing events and objects and responding to them based on past experience with other things in that category. But inaccurate associations are inevitable. The criminal justice system must take steps to avoid relying on stereotypes when searching for perpetrators. Doctors can misdiagnose if they are overly focused on cases that might look similar but in fact have very different causes. The construction worker in our example above may be on his way to a book club meeting while the professor is headed out to do yardwork.

Avoiding the representative bias requires paying close attention to what information you actually know versus what assumptions you may be making. Investors can fall into the trap of believing that a situation or investment will follow the same trajectory as a past similar situation or investment. Investment categories are based on correlations, but beware of assigning future correlations based on past events.

## STATUS QUO BIAS

People tend to resist change. Research shows that people nearly always prefer the familiar and known, a particular form of risk aversion (some behavioral scientists suggest that the endowment effect may really be just status quo bias). Studies demonstrate that even when the current situation is unpleasant or failing, people will still choose the status quo over an unknown change.

> **"THE SOURCE OF THE STATUS-QUO TRAP LIES DEEP WITHIN OUR PSYCHES, IN OUR DESIRE TO PROTECT OUR EGOS FROM DAMAGE. BREAKING FROM THE STATUS QUO MEANS TAKING ACTION, AND WHEN WE TAKE ACTION, WE TAKE RESPONSIBILITY, THUS OPENING OURSELVES TO CRITICISM AND TO REGRET. NOT SURPRISINGLY, WE NATURALLY LOOK FOR REASONS TO DO NOTHING. STICKING WITH THE STATUS QUO REPRESENTS, IN MOST CASES, THE SAFER COURSE BECAUSE IT PUTS US AT LESS PSYCHOLOGICAL RISK."**
>
> - Hammond, Keeney, and Raiffa, 1998

Also known as the force of inertia, status quo bias is one of the reasons brand loyalty is so powerful. When "New Coke" came on the market in 1989, Coke drinkers' negative reaction prompted Coca Cola to continue marketing "Classic Coke." In blind taste tests, participants greatly preferred the "New Coke" formulation, but in actuality, it did so poorly on the market, it was eventually discontinued.

Samuelson and Zeckhauser identified status quo bias with a series of experiments in 1988. Extrapolating from those experiments, they quantified the power of the bias; in an election expected to be evenly divided, "the incumbent office holder would claim an election victory by a margin of 59% to 41%." (Samuelson, Zeckhauser, 1988) When faced with multiple choices, the status quo bias becomes even stronger.

For investors, status quo bias presents a clear danger, as individuals have a propensity to avoid making changes or trying new ideas. Investors are often likely to hold onto investments or strategies even when they are not succeeding. It can feel less risky to continue in the status quo rather than take action and make changes, but that is not necessarily the case in reality. The status quo bias is unavoidable, but investors can recognize it and be deliberate in making choices, whether that be to take action or to not take action.

## SUNK COST FALLACY

If you've ever started a book or film that you found terrible but felt as if once you started, you needed to see it through to the end, you've experienced the fallacy of sunk costs. This is the very human bias that keeps you tied to a project or idea once you've committed time, money, or effort into it. A "sunk cost" is a cost that cannot be recovered, such as money that has already been spent or committed or time that you've already put in. The fallacy is to justify continued involvement based on those sunk costs, when logically they should not factor in to future decisions at all. When people say you should "cut your losses," they are suggesting you steer clear of the fallacy of sunk costs.

Consider a scenario in which a woman hires a law firm to help her with a particular issue and pays an initial retainer fee to the firm. After several meetings, she realizes that the law firm does not have the resources she needs. She may think that since she has already paid quite a bit of money that the best course of action is to continue pouring money into the firm in the slim hope that they will acquire the necessary resources. Or, she can recognize her sunk costs and make the best future decision: to find a new law firm with the capabilities she needs.

The sunk cost fallacy rears its head frequently in investing, as investors may be tempted to hold on to assets for longer than makes sense, based on the hope of retrieving sunk costs. To avoid this fallacy, decisions must be forward-looking; investors should let go of past choices that cannot be changed or recovered.

The heuristics listed above are some of the most common and prevalent, particularly among those that impact investors. But this is by no means an exhaustive list, and we encourage interested readers to dive deeper into the fascinating topic of how our minds operate on our behalf but behind the scenes.

## Why discipline in investing is critical

There are plenty of areas in life in which navigating with intuition and gut feeling can be very successful. The unconscious parts of the human mind are generally helpful and guide us through very complex decisions and experiences while keeping the burden on the conscious mind to a manageable level. People would do well to cultivate their intuition and learn how to use it to best advantage.

However, investing is an area in which emotion, unconscious bias, and assumptions are more likely to be harmful and disruptive than helpful. Much of the skill involved in investing is counter-intuitive; buy when a stock's price is low, sell when a stock's price is high, don't follow the herd, etc. Successful long-term investing is far better served by setting clear objectives and parameters, using thoughtful criteria, and analyzing data than by listening to one's gut.

It's important to understand that these unconscious biases are part of who we are, ingrained into our psyche. These heuristics are not typically individual actors, but work together in concert and cumulatively. Becoming aware of them and recognizing them is a good first step,

but investors should be taking conscious action to apply a disciplined approach that will override irrational decision-making. We outline below some tools for building a disciplined strategy.

Volatility is part of investing, and volatility results in emotional reactions. Markets are by nature noisy and can be stressful and unnerving, especially when negative. This is when the risk of emotional decision-making is at its greatest, but for long-term investors who are patient and disciplined, volatility can represent a chance of better-than-expected returns.

# Applying discipline to your investment strategy

### IDENTIFY YOUR RISK TOLERANCE.

Your investment strategy hinges on two crucial elements; your risk tolerance and your investment time horizon. If your portfolio is out of balance with your actual tolerance for risk, volatility may become an overly emotional experience and that can result in impulsive decision-making. Be clear and honest in assessing your risk tolerance, and maintain the perspective appropriate to your time horizon.

### SET ASSET ALLOCATION PARAMETERS AND REBALANCE REGULARLY.

Your asset allocation strategy should identify the percentage range for each asset class, so that the portfolio won't become overweighted to one or another asset category as it grows. You should select the maximum and minimum range for large categories such as stocks and bonds, but you can also get more granular, identifying parameters for narrower asset classes such as short and long-term bonds, U.S. large cap, small cap, and international equity.

Once you have set asset allocation ranges, keep to them. Unless you make a conscious, tactical choice to adjust your asset allocation strategy, rebalance your portfolio at least annually to maintain your allocation within its range bounds.

### BE A FORWARD-LOOKING INVESTOR.

You can use historical data to provide context and analysis to inform your outlook, but keep your attention future-focused. Investing is never about the past, and focusing too much on past events can result in succumbing to the fallacy of sunk costs or the gambler's fallacy. Use your knowledge and analysis to guide you in making decisions that are forward-looking.

### MAINTAIN A LONG-TERM PERSPECTIVE.

Keeping a long-term outlook can prevent you from making reactive short-term decisions. Long-term investors focus on certain key decisions to set their overall strategy; once set, they don't need to become consumed with short-term market movements and volatility. If you become uncomfortable and find it difficult to keep a long-term perspective, you may need to revisit your strategy and adjust it to better match your risk tolerance.

### CHALLENGE YOUR BELIEFS AND DECISIONS.

Successful investing is the art of being a contrarian. Being susceptible to availability, overconfidence, status quo bias, and groupthink necessitates the deliberate action of challenging your facts, analysis, and decisions. Investors should incorporate a formal process for reviewing past decisions, questioning analysis, and looking at things from different angles.

### UTILIZE AN INVESTMENT ADVISOR/SEEK PROFESSIONAL HELP.

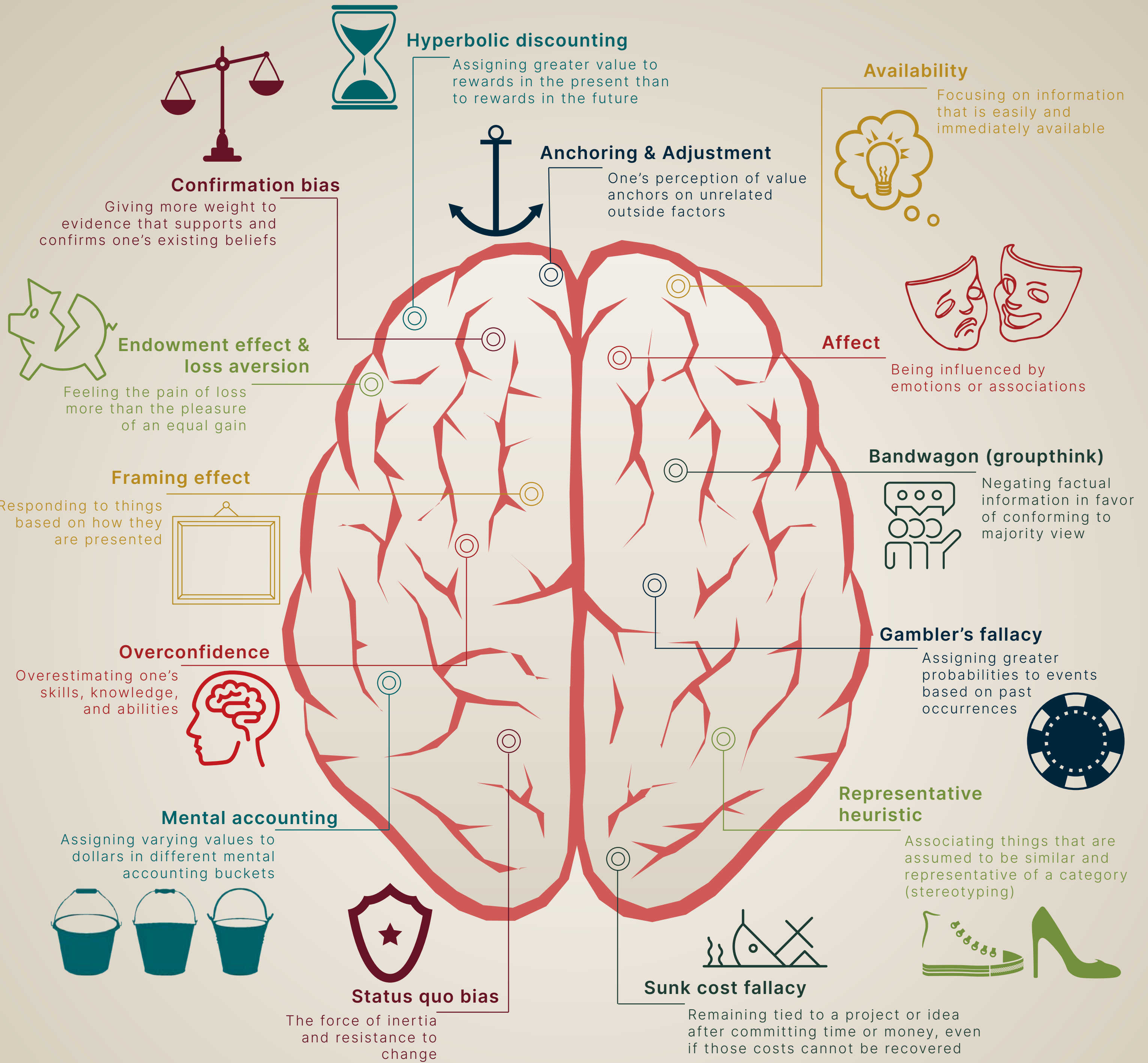
Investing by its nature is volatile and can set off deep emotional triggers that are often largely unconscious, resulting in irrational decision-making. Having outside counsel to help set and maintain a disciplined investment strategy and process can keep you one step removed and able to retain some emotional distance. Working with an investment advisor you trust means that you have access to professional skill, knowledge, and expertise that can help give you peace of mind as you experience market swings. They can also take on the role of applying the discipline necessary to maximize your portfolio's return potential over the long term.

## Conclusion

The Greek Temple of Apollo had three aphorisms inscribed in gold into the forecourt for seekers of Delphic wisdom, the first and most important of which was "Know thyself." Understanding the parts of your mind that are hidden from consciousness can help you become more aware of the influences affecting your choices and decisions. Having awareness gives you more control, as you can better understand the mental shortcuts that may be affecting your choices or take measures to counter the influences you don't want. (The other two aphorisms are "Nothing to excess" and "Certainty brings ruin," also words of great wisdom.)

For investors interested in learning more about behavioral economics, we recommend Richard H. Thaler's books, *Quasi Rational Economics; Misbehaving*; and *Nudge*, with Cass R. Sunstein, as a great starting point.

**To learn more or discuss how Arnerich Massena can help you build a long-term investment strategy matched to your goals and objectives, please contact us.**




# Behavioral Economics Heuristics

## ENDNOTES


"15 Availability Heuristic Examples" by Dave Cornell, Ph.D.; Helpful Professor; Oct. 23, 2022; https://helpfulprofessor.com/availability-heuristic-examples/

"6 Questions for Wharton Behavioral Economist Katy Milkman," by Diana Drake; Wharton Global Youth Program; https://globalyouth.wharton.upenn.edu/articles/world-economy/6-questions-for-wharton-behavioral-economist-katy-milkman/

"65% of Americans believe they are above average in intelligence; Results of two nationally representative surveys" by Patrick R. Heck, Daniel J. Simons, Christopher F. Chabris; PLoS One; July 2018; https://pubmed.ncbi.nlm.nih.gov/29969480/

"The Affect Heuristic and Risk Perception - Stability Across Elicitation Methods and Individual Cognitive Abilities" by Kenny Skagerlund, Mattias Forsblad, Paul Slovic, and Daniel Vastfjall; *Frontiers in Psychology*; June 12, 2020; Vol. 11; https://www.frontiersin.org/articles/10.3389/fpsyg.2020.00970/full

"Anchoring Bias Heuristic & Decision Making: Definition and Examples" by Eleanor Myers; *Simply Psychology*; February 15, 2023; https://simplypsychology.org/what-is-the-anchoring-bias.html

"Anomalies: The Endowment Effect, Loss Aversion, and Status Quo Bias" by Daniel Kahneman, Jack L. Knetsch, Richard H. Thaler; *The Journal of Economic Perspectives*; Winter 1991; https://scholar.princeton.edu/sites/default/files/kahneman/files/anomalies_dk_jlk_rht_1991.pdf

*Before You Know It: The Unconscious Reasons We Do What We Do* by John Bargh, Ph.D.; Atria Books; October 17, 2017

"Behavioral Finance and Investment Committee Decision Making" by Arnold S. Wood; *CFA Institute Conference Proceedings Quarterly*, December 2006

"The Framing of Decisions and the Psychology of Choice" by Amos Tversky and Daniel Kahneman; Science; Jan. 30, 1981; https://psych.hanover.edu/classes/Cognition/Papers/tversky81.pdf

"Fundamentals of behavioral finance: Overconfidence bias" by Omar Aguilar, Ph.D.; Charles Schwab Asset Management; Nov. 3, 2021; https://www.schwabassetmanagement.com/content/overconfidence-bias

"The Gambler's Fallacy and the Hot Hand: Empirical Data from Casinos" by Rachel Croson and James Sundali; *The Journal of Risk and Uncertainty*; 2005; https://www.stat.berkeley.edu/~aldous/157/Papers/croson.pdf

"Group Decision-Making: Implications for Investment Committees," by Gary R. Mottola & Stephen P. Utkus; *Vanguard Investment Counseling and Research*; 2009

"The Hidden Traps in Decision Making" by John S. Hammond, Ralph L. Keeney, and Howard Raiffa; *Harvard Business Review*; Sept. - Oct. 1998; https://hbr.org/1998/09/the-hidden-traps-in-decision-making-2

"Judgment Under Certainty: Heuristics and Biases" by Daniel Kahneman, Paul Slovic, and Amos Tversky; Cambridge University Press; 1982

"Lessons from Behavioral Economics" by David Zilberman; Berkeley Blog; March 26, 2019; https://blogs.berkeley.edu/2019/03/26/lessons-from-behavioral-economics/

"On Making the Right Choice: The Deliveration-Without-Attention Effect" by Dijksterhuis, Bos, Nordgren, and Van Baaren; *Science*; February 17, 2006: https://www.science.org/doi/abs/10.1126/science.1121629

“Status Quo Bias in Decision Making” by William Samuelson and Richard Zeckhauser; Journal of Risk and Uncertainty; 1988; https://www.researchgate.net/publication/5152072_Status_Quo_Bias_in_Decision-Making/link/0c96052a5cc6179b4b000000/download

“The Unconscious Executive” by Martha Lagace; Working Knowledge; Harvard Business School; July 9, 2012; https://hbswk.hbs.edu/item/the-unconscious-executive

“Understanding Behavioral Economics,” *Psychology Today*; https://www.psychologytoday.com/us/basics/behavioral-economics

“What is Affect Heuristic?” Heuristic Encyclopedia; Newristics; https://newristics.com/heuristics-biases/affect-heuristic

“What is a Sunk Cost? Definition, Examples & Fallacy” by Steve Fiorillo; The Street; https://www.thestreet.com/dictionary/s/sunk-cost

“Why do our decisions depend on how options are presented to us? Framing Effect, explained”; *The Decision Lab*; https://thedecisionlab.com/biases/framing-effect

“Why do we tend to think that things that happened recently are more likely to happen again?” The Decision Lab; https://thedecisionlab.com/biases/availability-heuristic

“Why facts don’t change our minds” by Elizabeth Kolbert; *The New Yorker*; February 19, 2017; https://www.newyorker.com/magazine/2017/02/27/why-facts-dont-change-our-minds

## ABOUT ARNERICH MASSENA

Arnerich Massena builds lasting legacies in service of a greater good by investing with vision, passion, and purpose. Founded in 1991, Arnerich Massena is an independent, 100% employee-owned investment advisory firm servicing wealth management clients and endowments & foundations from across the United States, providing portfolio management, investment advisory services, and family office services. Arnerich Massena is a Certified B Corporation®.

Focused on client service and investing in change, Arnerich Massena creates portfolios that reflect top-tier research and collaborative expertise cultivated over nearly 30 years. The firm is different by design, bringing innovation and a forward-looking approach to investment research and portfolio construction. Known for successfully investing in high-impact areas like water resources, sustainable agriculture, fisheries, healthcare, and clean energy technology, Arnerich Massena has been a pioneer in the investment industry with alternative investment strategies, global portfolios, and private markets expertise.

Arnerich Massena is dedicated to constantly seeking new opportunities that resonate with clients’ values, objectives, and the outcomes they are looking for. The firm strives to be a business that exemplifies both corporate citizenship and professional service, and has received awards for its innovations in corporate philanthropy.

## CONTRIBUTORS

**Bryan Shipley, CFA, CAIA**
*Co-CEO, CIO, Managing Principal, Senior Investment Advisor*

**Dave Janec, FRM**
*Senior Investment Advisor*

**Jillian Perkins**
*Director of Communication*

© 2023 Arnerich Massena, Inc. All rights reserved.

This material is provided for informational purposes only to clients and prospective clients of Arnerich Massena, Inc. It is drawn from third-party sources believed reliable but not independently verified or guaranteed by Arnerich Massena. We do not represent that it is accurate or complete, and it should not be relied on as such. It does not constitute investment advice, which would need to take into account a client's particular investment objectives, financial situation, and needs. Opinions expressed are our current opinions as of the date appearing on this material. Past performance does not guarantee future results. Investments and strategies discussed herein may not be suitable for all readers, and you should consult with a legal, tax, or accounting professional before acting upon any information or analysis contained herein. The information, ideas, and context expressed herein are confidential, proprietary, expressly copyrighted and may not be sold, reproduced, republished, or distributed in any way without Arnerich Massena's prior written consent.