CS 007: SESSION 2
PERSONAL FINANCE FOR ENGINEERS
**Predictably Irrational** is the title of a book by Dan Ariely.

*DesignHacks.co: 188 Known Cognitive Biases*
BEHAVIORAL FINANCE

How many of you think you are rational with your money?

(show of hands)
YOU ARE NOT RATIONAL
WHY BEHAVIORAL ECONOMICS?

• A number of economic frameworks assume that humans evaluate financial decisions consistently & rationally

• Daniel Kahneman & Amos Tversky (1960s)

• 2002 Nobel Memorial Prize in Economic Sciences

• Prospect Theory
THREE THEMES IN BEHAVIORAL ECONOMICS

• **Heuristics**
  Humans make a vast majority of their decisions using mental shortcuts or rules of thumb.

• **Framing**
  Humans use anecdotes & stereotypes to understand & respond to events

• **Market Inefficiencies**
  Mis-pricing or non-rational decision making
ANCHORING

- People estimate answers to new & novel problems with a bias towards reference points

- Tversky & Kahneman (1974) (quick multiplication)

- Dan Ariely (social security numbers & prices)

- Common examples:
  - Price you bought a stock at
  - High point for a stock
MENTAL ACCOUNTING

- Money is fungible, but people put it into separate “mental accounts”
- Also known as “bucketing”
- Example: Lost Movie Tickets
- Example: “Found Money”
- Real world problems: Vacation Fund & Credit Card Debt
CONFIRMATION & HINDSIGHT BIAS

• Very different biases, but often conflated with each other.

• **Confirmation Bias**
  We selectively seek information that supports pre-existing theories, and we ignore / dispute information that challenges or disproves them.

• **Hindsight Bias**
  We overestimate our ability to predict the future based on the “obviousness” of the past.

• Combination of the two is particularly bad.
GAMBLER’S FALLACY

• We see patterns in independent, random chains of events.

• We believe that, based on a series of previous events, an outcome is more likely than odds actually suggest.

• Example: Dinner Party & Coin Flips

• Real odds might be 51/49, but we tend to jump to 80/20.

• Likely cause: the rarity of “independent events” in day-to-day experience.
HERD BEHAVIOR

- We have a tendency to mimic the actions of the larger group.
- Example: Building Psych Experiment
- Example: Empty Supermarket
- Crowd psychology may be a contributor to bubbles.
- Bucking the crowd creates stress & fatigue. It gets harder, not easier.
- Easier to be “wrong with everyone” than “right and alone”
- No gets fired for buying IBM?
OVERCONFIDENCE

- In one study, 74% of investment managers believe they deliver above average returns.
- Positively correlated with IQ.
- The smarter you are, the more likely it is that you are a victim of this particular bias.
- Humility is a virtue.
OVERREACTION & AVAILABILITY BIAS

- **Overreaction**
  We overreact to recent events

- **Example: Celebrity Illness**

- **Availability Bias**
  We assume that the data we have been provided is representative of the entire data set.

- The combination is particularly bad.

- Studies show checking stock prices daily leads to more trading & worse results on average.

- Worse for engineers, because we are immersed in “game changers” & “it is different this time”

THE AVAILABILITY HEURISTIC

WHAT ACTUALLY HAPPENS IN THE WORLD.

Covered in the News.

JamesClear.com
YOU HAVE $1,000 AND YOU MUST PICK ONE OF THE FOLLOWING GAMES

A
You have a 50% chance of gaining $1,000, and a 50% chance of gaining $0.

OR

B
You have a 100% chance of gaining $500.
NOW, YOU HAVE $2,000 AND YOU MUST PICK ONE OF THE FOLLOWING GAMES

A
You have a 50% chance of losing $1,000, and a 50% chance of losing $0.

OR

B
You have a 100% chance of losing $500.
• We hate losses more than we love winning

• Average loss aversion across multiple studies is between 2:1 and 3:1

• Affects our views on a wide range of situations, including career decisions, dating, purchasing, investing and taxes.

• We even hate being responsible for decisions that could result in a loss

• Example: “Sunk Cost” mistakes with investments

• Currently under debate! There is some debate now about whether this effect is a product of confirmation bias in research! *

* https://blogs.scientificamerican.com/observations/why-the-most-important-idea-in-behavioral-decision-making-is-a-fallacy/?amp
IT'S OK TO NOT BE RATIONAL
IT’S OK TO NOT BE RATIONAL

• As Dan Ariely beautifully put it, the key is that humans are predictably irrational

• Know your own flaws, and you can set up systems to help account for them

• Self awareness is key (yes, my Mom is a psychologist)
ADDITIONAL COURSES & MATERIAL

- Econ 178: Behavioral Economics
- Econ 278: Behavioral & Experimental Economics
- ACCT 618 (GSB): Market Efficiency & Informational Arbitrage
- Coursera / Duke: Behavioral Finance
  https://www.coursera.org/learn/duke-behavioral-finance

#GoStanford
NEXT WEEK: GETTING PAID

- Compensation
- Different models & methods
- Public vs. Private Companies
- Stock Options vs. Restricted Stock
- Understanding Equity Compensation
- Taxes