

The Psychology of Investing

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Why psychology?

- In 2000, average holding period on Nasdaq was 95 days (400% annual turnover)
- In 2002, trading volume on major markets was 100% of market cap in US, 215% in UK, 70% in Japan, and 180% in Germany
- Is a market a place to invest or trade?
- The more it's driven by trading vs investing, the more the market is driven by psychology and not economics

Don't Efficient Markets Eliminate Behavioral "Inefficiencies"?

- Neoclassical economics suggests that while market inefficiencies (such as psychologically guided investments) exist they are quickly arbitrated away
- As a result markets are efficient and bubbles, for example, should never exist
- Is this true?

A quiz:

- What percentage of Americans use Credit Unions for banking and investments?
- What percentage of Americans think that bank mutual funds are insured?
- What percentage of mutual fund owners cannot identify whether their fund is fixed income or equity?

How sure are you about your responses?

- For each answer, give me a range (a lower and higher bound)
- The range should have the “right” answer 90% of the time
- If you are extremely confident the range should be small, if not confident the range should be large

Quiz answers:

- Q: What percentage of Americans use Credit Unions for banking and investments?
- A: **38%**
 - Source: Princeton Survey Research Associates

Quiz answers:

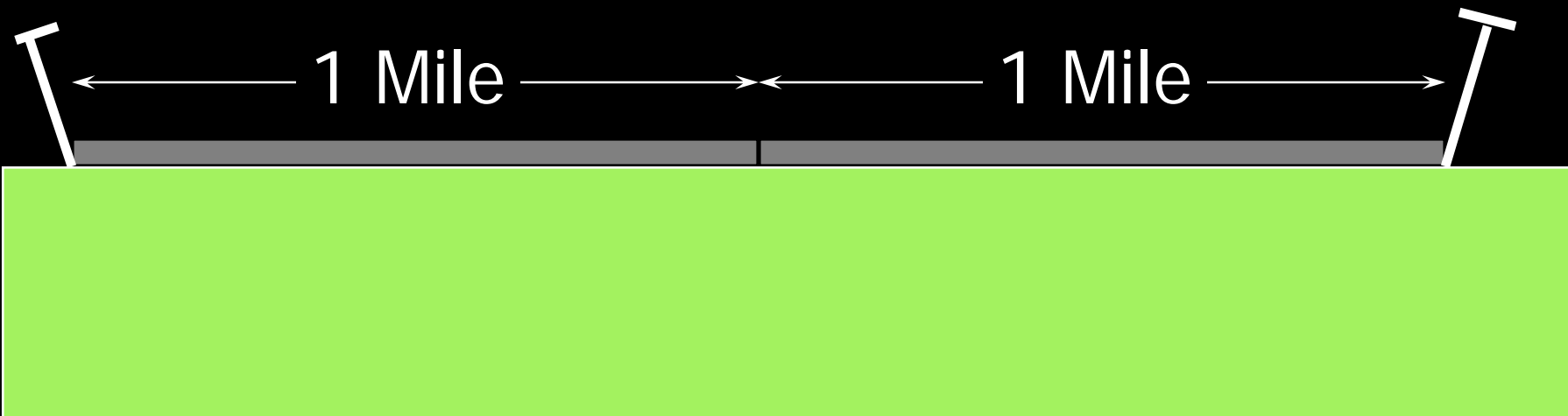
- Q: What percentage of Americans think that bank mutual funds are insured?
- A: **39%**
 - Same source, plus surveys by Columbia Univ. and SEC (goes up to 68% for holders of bank mutual funds)

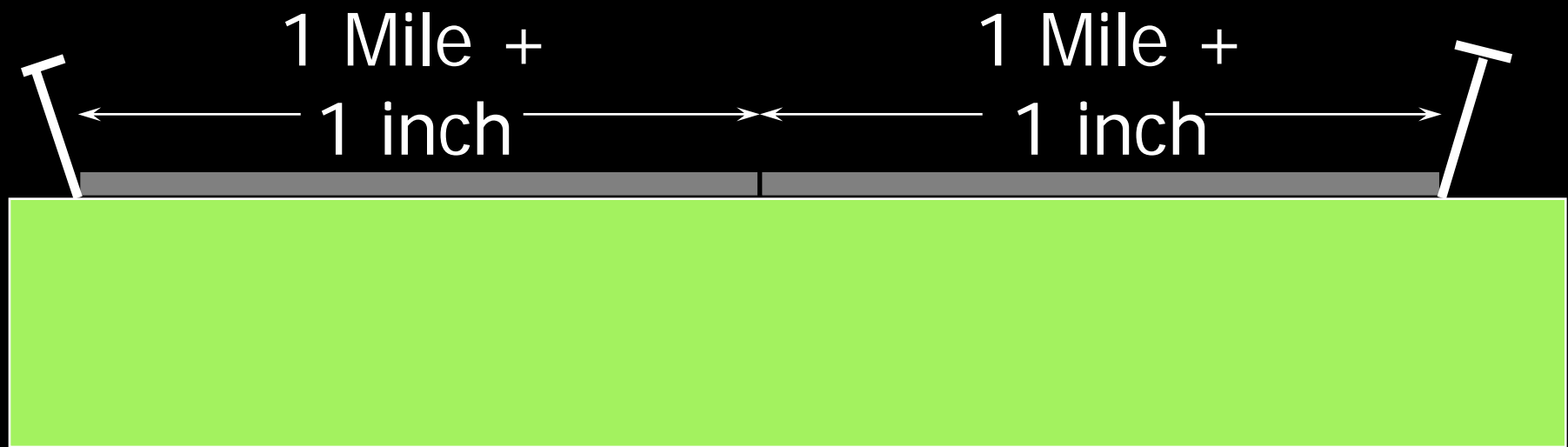
Quiz answers

- Q: What percentage of mutual fund owners cannot identify whether their fund is fixed income or equity?
- A: **75%**
 - Source: national survey of 3400 mutual fund investors (Capon, Fitzsimons and Prince 1996)

Conclusions

- Retail investors are not very knowledgeable
- You overestimated the investor
 - For each quiz item, about 10% of us should have the “truth” fall outside our range
 - 1. 38% _____
 - 2. 39% _____
 - 3. 75% _____





How high will the railroad ties rise?

What range are you 95% confident this height falls in?



29.7 Feet

What's wrong with being confident?

- Based on an *illusion of knowledge*
 - More information virtually always leads to a feeling of confidence, even if it is confusing
- Typically leads to churning one's portfolio unnecessarily

Boys will be boys

- Men are dramatically more confident in their investment skills than women
- They in turn trade 45% more than women with comparable portfolios
- This leads men to earn an average return of 0.93% less than women

Barber and Odean, QJE 2001

Overconfidence (cont'd)

- Drivers of overconfidence?
 - Unrealistic View of Personal Abilities / Prospects
 - 90% of Drivers Claim Above Average Skill
 - 99% of Freshman Claim Superior Intelligence
- Humans are natural selective hypothesis testers
 - When “testing” the hypothesis that they are a good investor what comes to mind? Previous successes or failures? How will they remember neutral outcomes?

How are investors really thinking?

- Heuristics:
 - The use of decision rules help make decisions manageable
 - They can often lead to systematic biases in judgment and choice decisions

Questionnaire Q1a

- In four pages of a novel (about 2000 words), how many words would you expect to find that have the form _ _ _ _ ing (seven-letter words that end with *ing*)? Indicate your best estimate by circling one of the following values:

0 1-2 3-4 5-7 8-10 11-15 16+

⌘ Answer: 68% said 16+

Questionnaire Q1b

- In four pages of a novel (about 2000 words), how many words would you expect to find that have the form `_ _ _ _ _ n _` (seven-letter words that have the letter *n* in the sixth position)? Indicate your best estimate by circling one of the following values:

0 1-2 3-4 5-7 8-10 11-15 16+

⌘ Answer: 37% said 16+

Availability

- Items and events that are more easily imagined will be more available in memory than those that are bland, vague, or less easily imagined
- These items will often be judged and chosen in a biased manner
 - Recency
 - Vividness
 - Retrievability

Availability (Cont'd)

- Q: Which of the following causes more deaths in the US each year?
 - (A) Stomach cancer
 - (B) Motor vehicle accidents

⌘ A: (A), by a factor of 2 to 1

The hot hand

- A basketball player in prime condition has hit 50% of his shots during his pro career. His last three shots have been good.
- If offered a \$1 bet whether he'll make or miss his next shot, should you bet he'll make it or miss it?

Gilovich et al, 1985

The hot hand (cont'd)

- Flip a coin 20 times, 80% chance you'll get three heads or tails in a row
- 140 of 1100 mutual funds in national study are likely to outperform the market index three years in a row, just as a matter of chance

Questionnaire Q2

- Linda is 31 years old, single, outspoken, and very bright. She majored in philosophy. As a student, she was deeply concerned with issues of discrimination and social justice, and also participated in antinuclear demonstrations. Please circle the most likely alternative:
 - Linda is a bank teller.
 - Linda is a bank teller and is active in the feminist movement.

⌘ Answer: 60% felt the second option was most likely

Representativeness

- The evaluation of an item or event is affected by the resemblance of that item/event to similar predecessors
- Often a useful decision rule, if no other information exists
- However, decision makers often ignore other information and overweight these perceived similarities

Representativeness (Cont'd)

- Q: Pierre is finishing his MBA at a prestigious university. He is very interested in the arts, and at one time considered a career as a musician. Is Pierre more likely to take a job:
 - (A) In the management of the arts?
 - (B) With a management consulting firm?

⌘ A: (B), base rate of <1% versus 40+%

Questionnaire Q3a

- Q: A newly hired engineer from a computer firm in the Vancouver area has four years of experience and good all-around qualifications. When asked to estimate the starting salary for this employee, your assistant (knowing little about the profession) guessed an annual salary of \$48,000. What is your estimate?

⌘ Answer: \$63,500

Questionnaire Q3b

- Q: A newly hired engineer from a computer firm in the Vancouver area has four years of experience and good all-around qualifications. When asked to estimate the starting salary for this employee, your assistant (knowing little about the profession) guessed an annual salary of \$78,000. What is your estimate?

⌘ Answer: \$83,600

Anchoring and Adjustment

- People make estimates or decisions starting from an initial value, the anchor, that is adjusted
- Adjustments are typically insufficient; different starting points yield very different estimates and decisions

Why a realtor shows you the priciest house first ...

Consumers and investors don't "know" prices. Their willingness to pay differs when the order in which they observe prices ranges from ...

	low to high (\$)	high to low (\$)
Electric shaver	20.18	24.00
Aftershave lotion	2.28	3.56
Hair Spray	1.02	1.41
Blouse	7.37	9.27
Sport Coat	39.85	44.64

Wright & Scott 1974

Average investors actually know very little...

- National mutual fund study of over 3000 investors (*Capon, Fitzsimons and Prince 1996*)
 - Only 61% knew whether the fund was load or no load
 - Only 25% could correctly articulate the basic management style (e.g., growth, value, index, etc.)
 - Only 28% knew whether the fund was international versus domestic in focus
- Good news is that affluent investors had much greater levels of knowledge (*Capon, Fitzsimons & Weingarten 1994*)
- Both groups focused primarily on previous year's performance

- How do these and other decision making rules and biases come into play as both consumer and institutional investors make their day to day investment decisions?

Traditional economic theory

- Tradition: All income is integrated into net worth regardless of source
 - Violation: reference dependence
- Tradition: It is only net worth that matters, not the changes
 - Violation: loss aversion

Reference dependence/ mental accounting

You are lying on the beach on a hot lazy afternoon. For about an hour now, you have been thinking about an ice-cold bottle of your favorite beer. One of your friends gets up to make a phone call and offers to get you a beer from a **small run-down grocery store** on the way back. Your friend says that the beer might be expensive and asks the maximum price that you are willing to pay. If the price is higher, your friend won't buy the beer. What is your maximum price? \$_____

... **fancy resort hotel**

Thaler, 1985

Playing with the house money

- Q1: You are in Vegas for a weekend gambling and won \$1000 playing the slots in the morning. Will you bet more tonight than normal?
- Q2: You are in Vegas for a weekend gambling and discovered that you have \$1000 more in your savings account than you thought. Will you bet more tonight than normal?

Problems with mental accounts

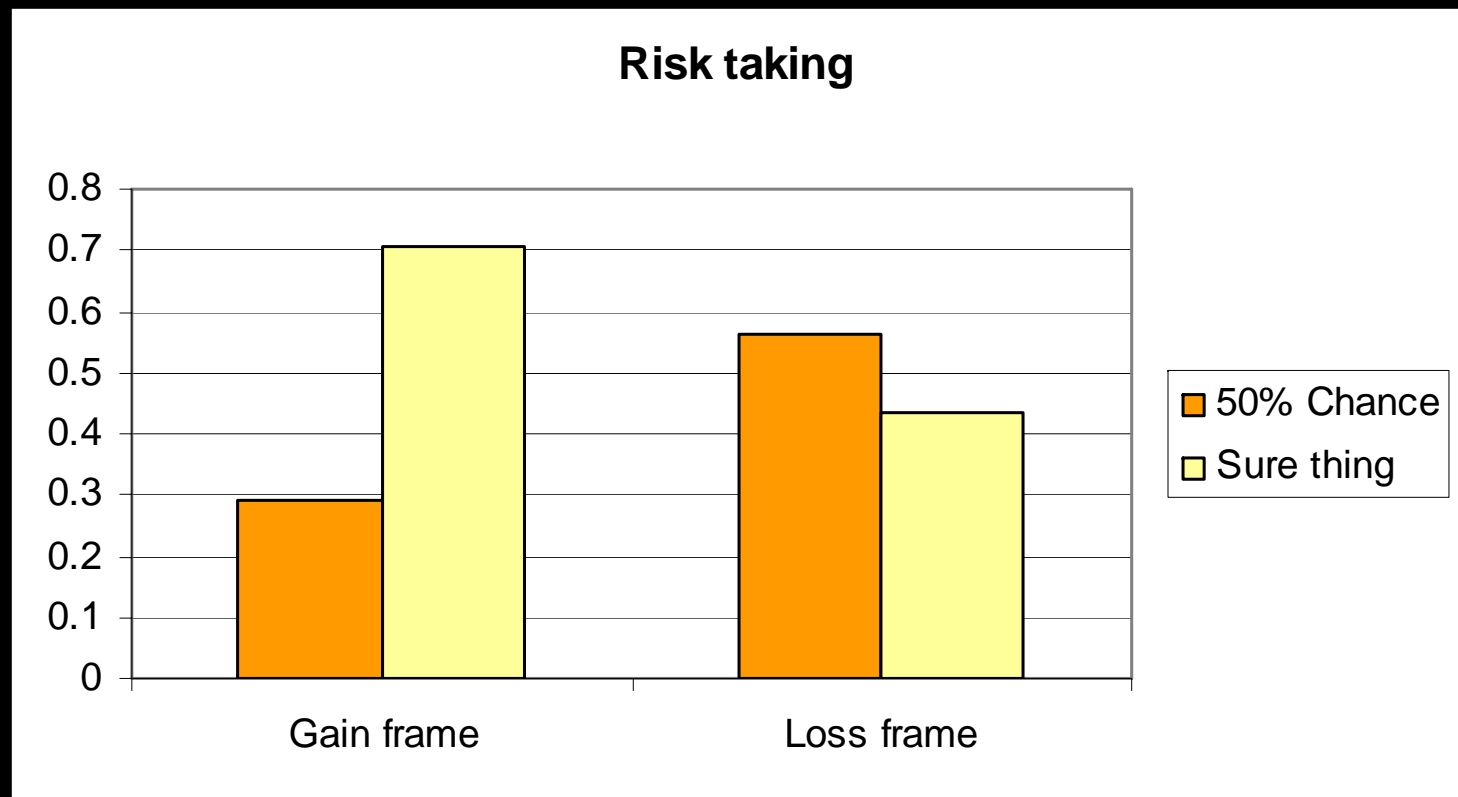
- Labeling \$15,000 in a savings account “savings” and not touching it, then borrowing money for a new car
- Labeling an end of year bonus a “win-fall” and investing it questionably

Framing/loss aversion

- In addition to whatever you own, you have been given \$1000. You are now asked to choose between alternative A and Alternative B.
 - Alternative A: A 50% chance of **gaining** \$1000
 - Alternative B: A sure **gain** of \$500
- In addition to whatever you own, you have been given \$2000. You are now asked to choose between alternative A and Alternative B.
 - Alternative A: A 50% chance of **losing** \$1000
 - Alternative B: A sure **loss** of \$500

Kahneman and Tversky

Framing results



Value +

Losses

Gains

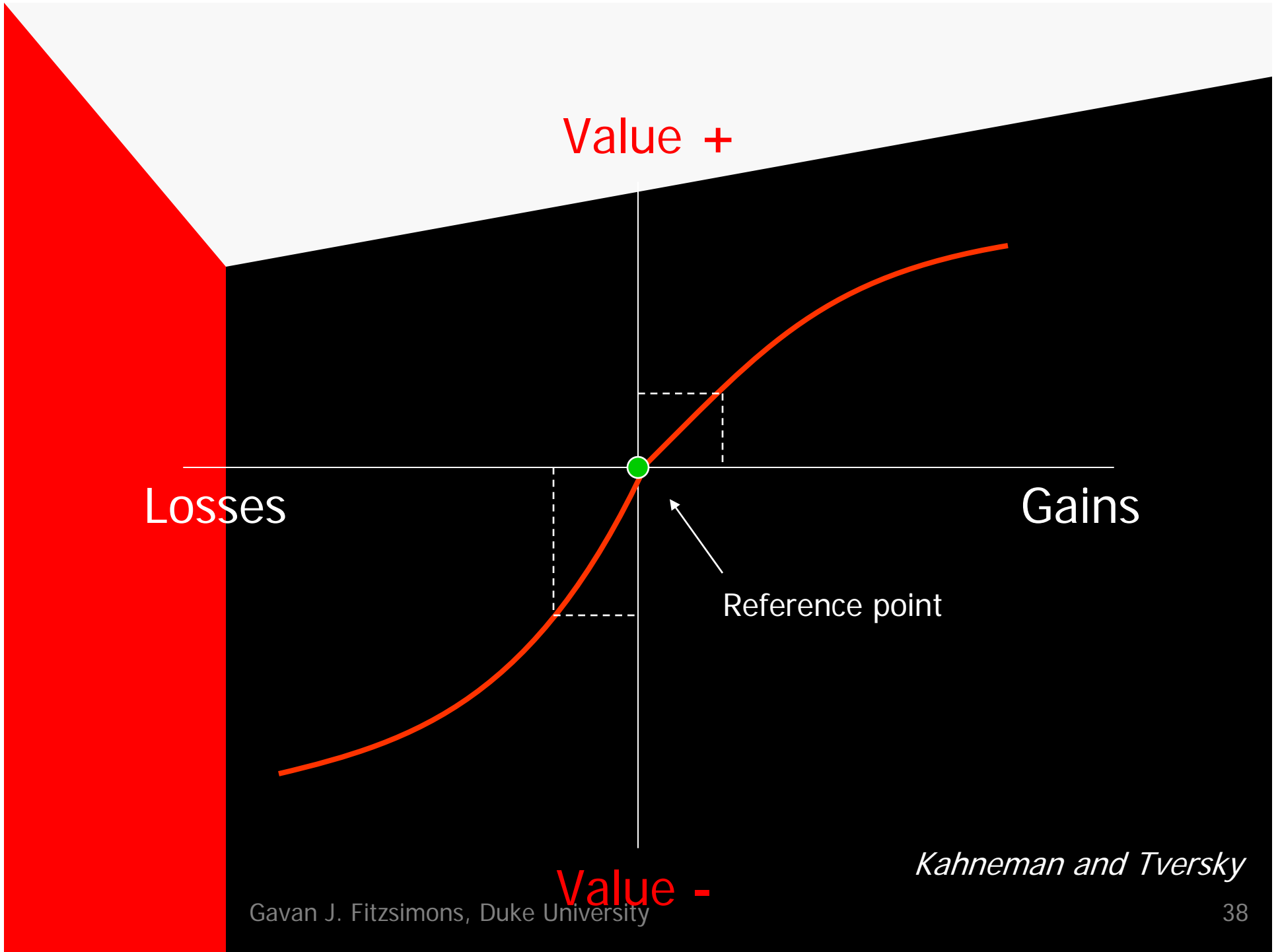
Reference point

Value -

Kahneman and Tversky

Gavan J. Fitzsimons, Duke University

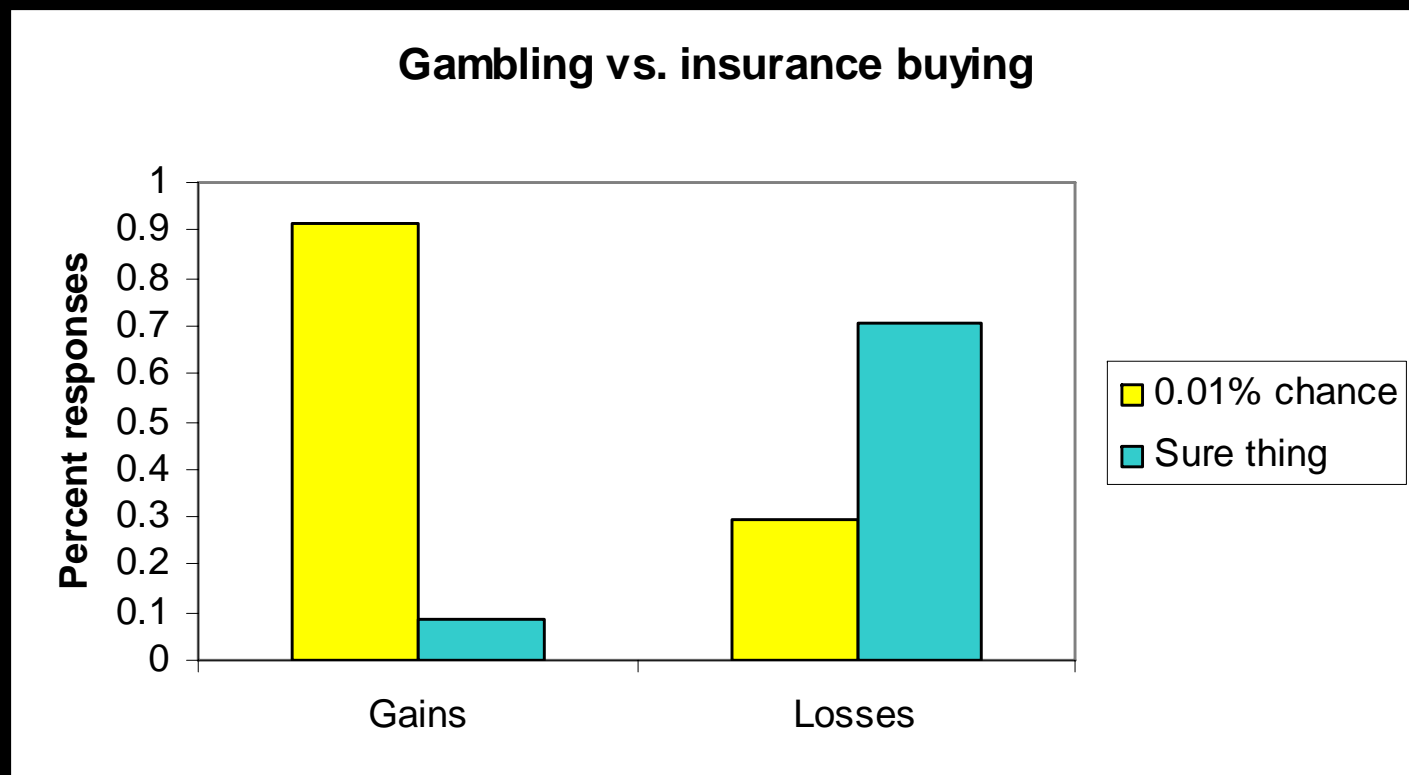
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Gambling versus insurance

- Gambling Frame
 - Alternative A: A 1 in 1000 chance of winning \$5000
 - Alternative B: A sure gain of \$5
- Insurance Frame
 - Alternative A: A 1 in 1000 chance of losing \$5000
 - Alternative B: A sure loss of \$5

Gambling versus insurance results



Strings of losses versus gains

- Due to loss aversion, it is desirable to “chunk” losses and partition gains
- Research on perceptions of pain
 - Rather have one long horrible procedure than series of short horrible ones (duration neglect)
 - Strong preference for ascending sequence at end
- Research on positive rewards
 - Prefer series of small rewards rather than one large one (controlling for uncertainty)

Freud on framing: Pain, guilt, and self-control

- Credit cards as a vaccination to the pain of paying
 - MIT MBA students paid twice as much for sports tickets with their cards than with cash
- Resolving guilt in our purchases
 - Consumers prefer frequency programs that reward charity cards for buying chocolates, but money-back cards for buying vitamins (Kivetz 2004)
- Self-control
 - Subscription gym memberships beat pay-per-visit
 - Small cigarette packs vs. large vitamin packages

Equity premium puzzle

- Real returns on average:
 - Stocks: 7%
 - 20 year treasury bonds: about 2%
 - T-Bills: just above 0%
- Over 20 years, \$1 is worth:
 - \$7.61 at 7%
 - \$1.81 at 2%
- Not accounted for by difference in risk (bonds half as risky as stocks)

“Smart” investors?

- Many academic institutions have a defined contribution plan – TIAA-CREF
 - CREF=stocks, TIAA=bonds
- How do professors invest?
 - Modal allocation is 50/50
 - Modal number of changes to allocation each year is zero

Speculation about cause

- Investors hate losses - shocking!
- As equity investments are more volatile they will show more losses on average (as well as higher average returns)
- TIAA is the riskless investment

Evidence in support

- Survey of professors
- Most couldn't identify what their TIAA/CREF allocation was
- Asked each to make hypothetical investments, allocating between:
 - Fund A (risky with high return)
 - Fund B (safe with lower return)
- Presented average returns over one and twenty year time horizons

Benartzi and Thaler 99 & 01

Presentation matters

- When shown 20 year returns, professors were much more likely to choose riskier funds (most chose 100% equity) and invest more assets
- The actual data they were shown was for TIAA and CREF 1 year and 20 year performance

Benartzi and Thaler 99 & 01

Presentation matters (cont'd)

- Also very sensitive to range of options presented (naïve diversification)
- Imagine the following choices:
 - Stock fund and bond fund
 - Stock fund A, stock fund B and bond fund
 - Stock fund, bond fund A, and bond fund B

What about how many choices?

- Up scale grocery store; experimenters set up a booth for sampling
 - One booth displayed 24 flavors of jam
 - One booth displayed 6 flavors of jam

Iyengar and Lepper, 1999

How many choices (cont'd)

Key results:

- Shoppers were more attracted to the 24 flavors booth (60% vs. 40%)
- But, those visiting the extensive choice booth were far less likely to end up purchasing jam (3% vs. 30%)

Iyengar and Lepper, 1999

Conclusions?

- Consumers' investment decisions do not match well with economic theory
- They use decision heuristics and suffer from biases when investing
 - Very sensitive to departures from status quo (reference dependence)
 - More sensitive to losses than gains (loss aversion)
- Financial literacy remains low

Implications?

- How should individual investors be educated to make improved investment decisions?
- Can helping our customers better understand how psychological effects can be self-defeating at times be a competitive advantage?
- What biases do we fall prey to ourselves?

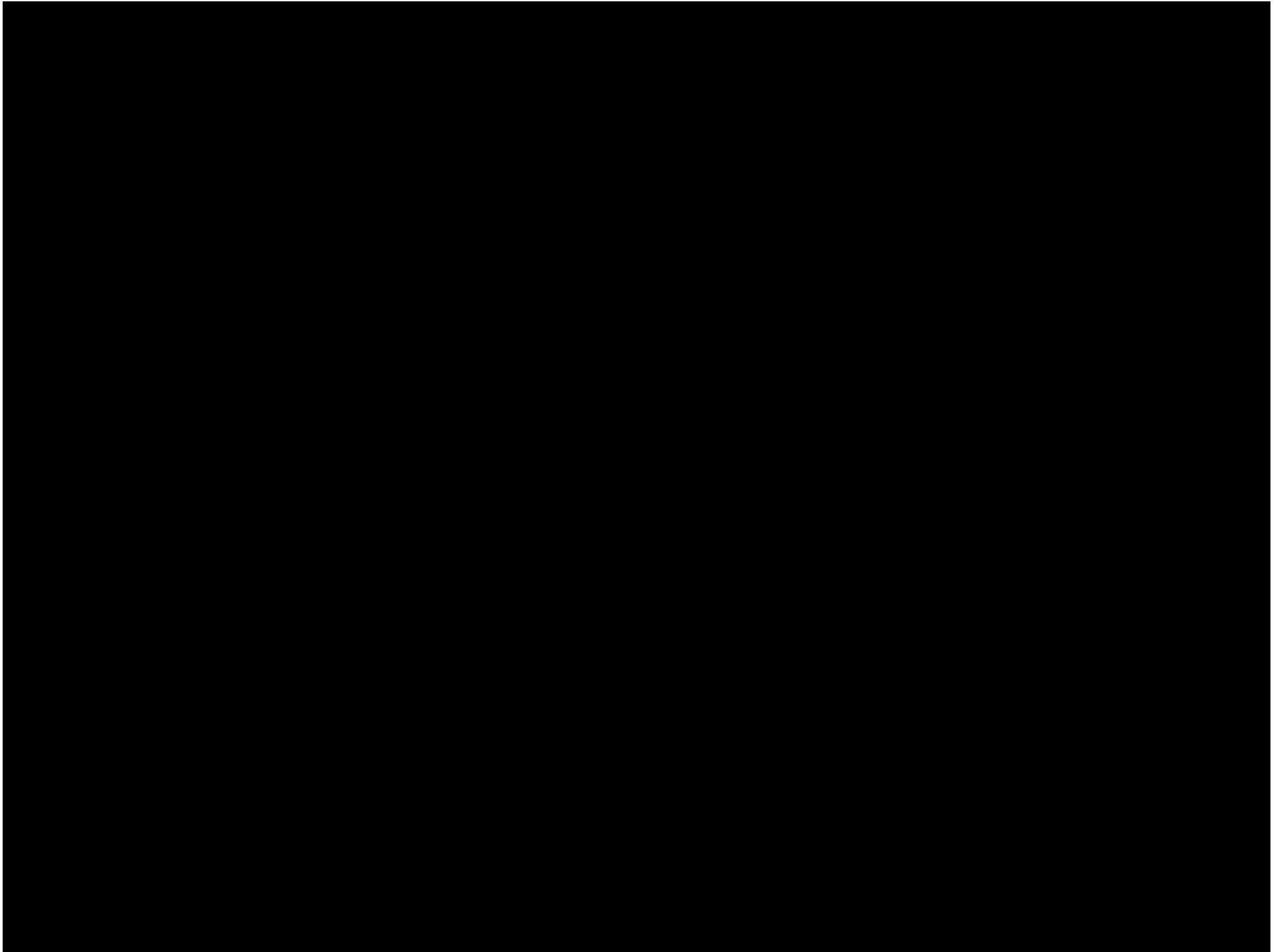
Further reading...

- Beyond Greed and Fear – Hersh Shefrin
- Inefficient Markets: An Introduction to Behavioral Finance – Andrei Shleifer
- Smart Money Decisions – Max Bazerman
- Why Smart People Make Big Money Mistakes – Belsky and Gilovitch

Final thought...

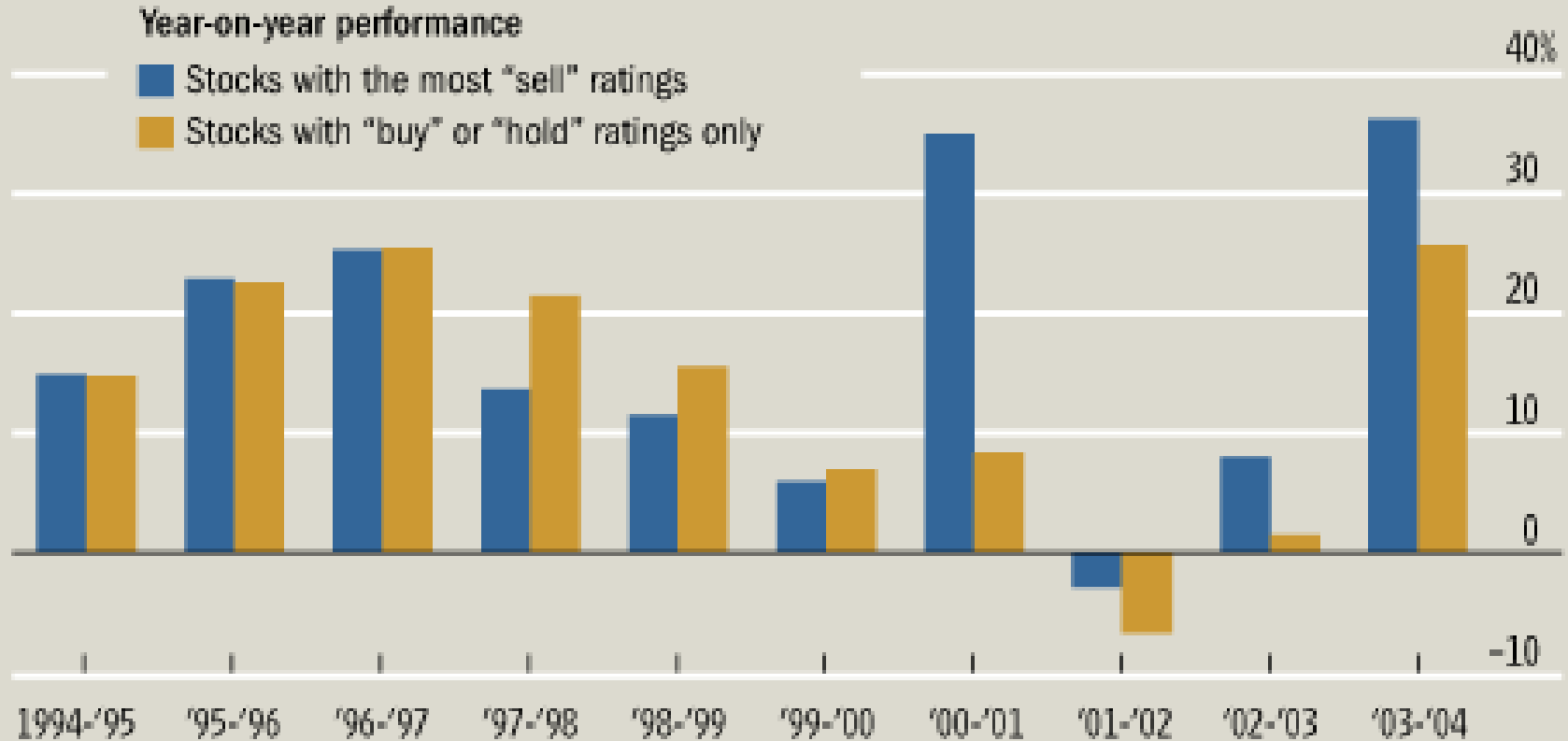
“Markets can remain irrational longer than you can remain solvent”

-- John Maynard Keynes



Buy the Sells

Stocks with the most “sell” ratings from analysts often perform better than those with only “buy” or “hold” ratings—especially in recent years.



Note: Based on stocks in the S&P 500 followed by at least five analysts. Performance measured over one year; rebalanced monthly

Source: Zacks Investment Research