“Behavioural Finance & Investment”

Current Topics in Investment Management

Heriot-Watt University, March 2026

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Key themes

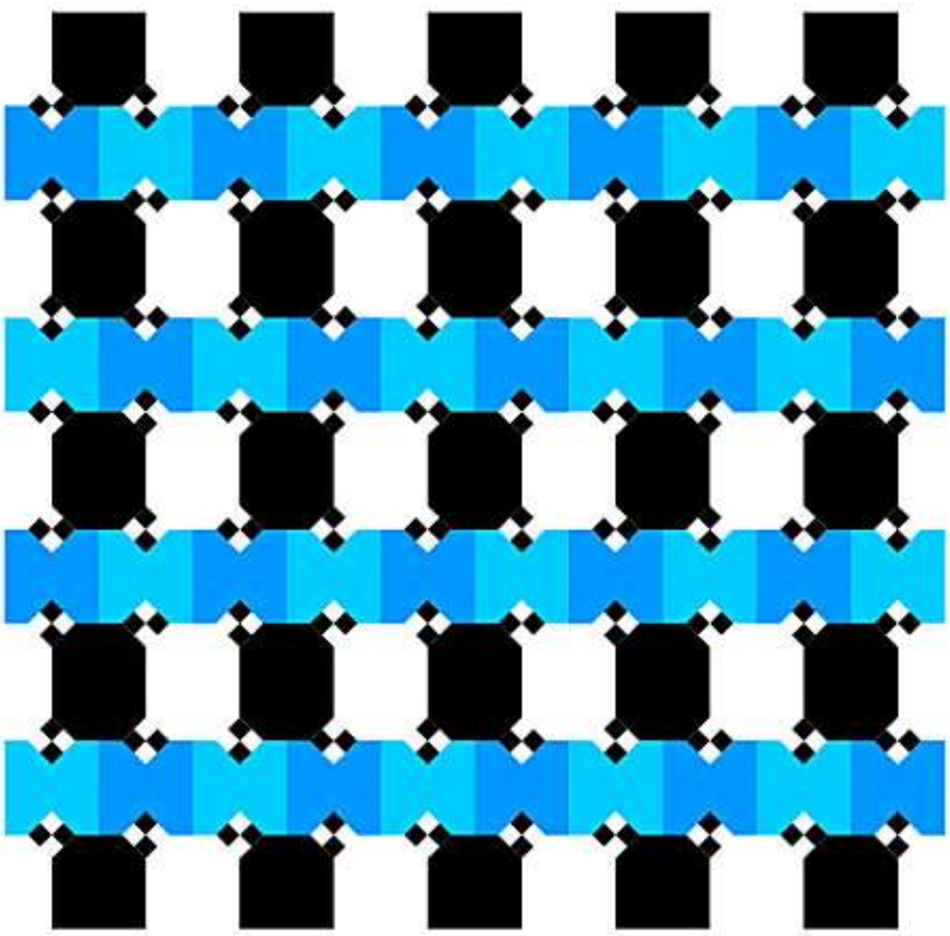
- Challenges to judgement
- Biases and Framing
- Experts and Forecasting
- Incentives and remuneration; ESG
- Beliefs
- Bubbles
- Dealing with biases; learning

Behavioural issues

- Emotional biases / affect
- Cognitive biases and errors
- Incentives and biases
- Individual vs social
- Beliefs

Noise & Unhelpful Cues

Bristol cafe wall illusion



Source: http://brainden.com/images/blue-horizontal-lines.jpg

What do lengthy corporate narratives conceal?

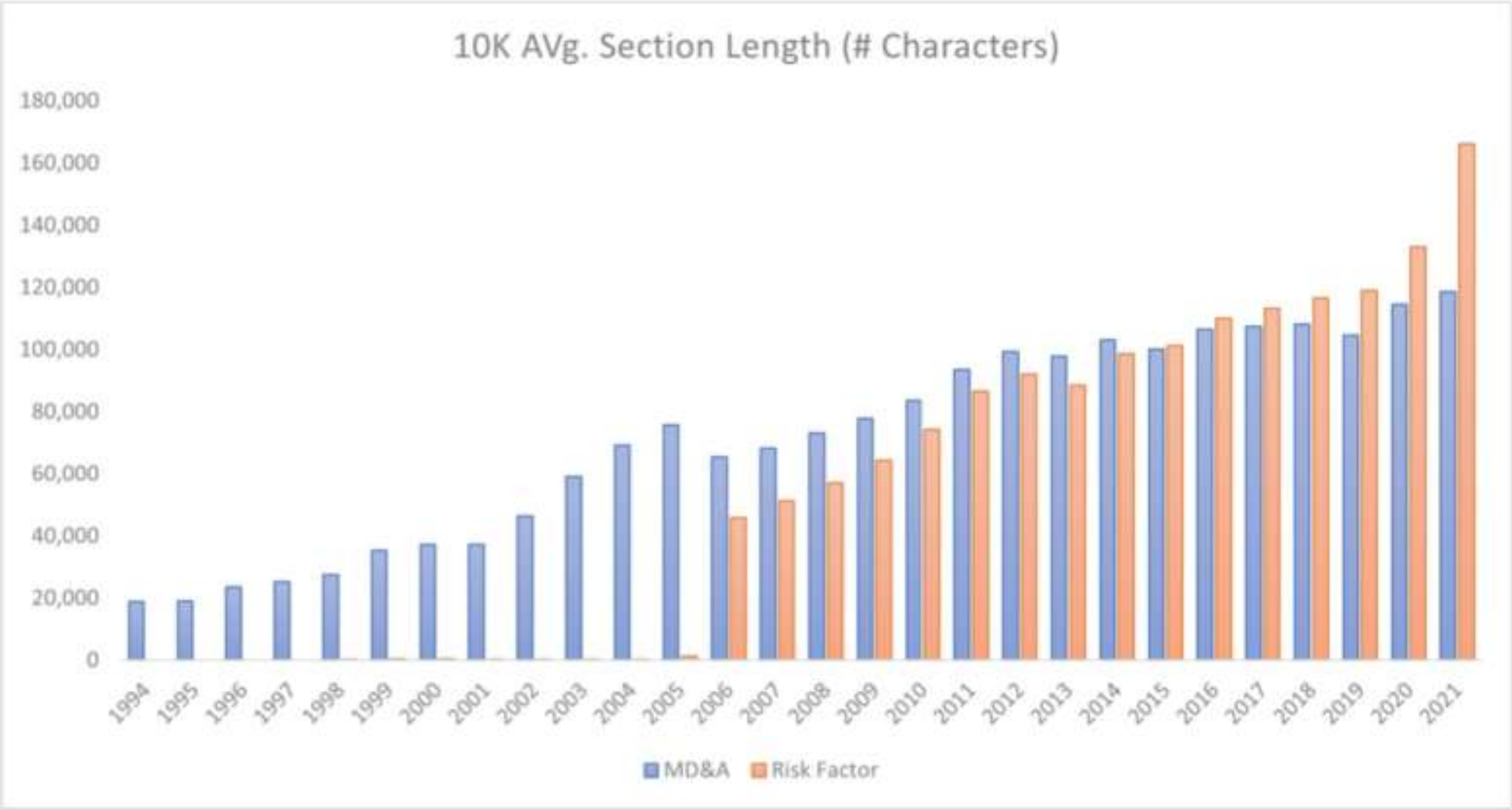


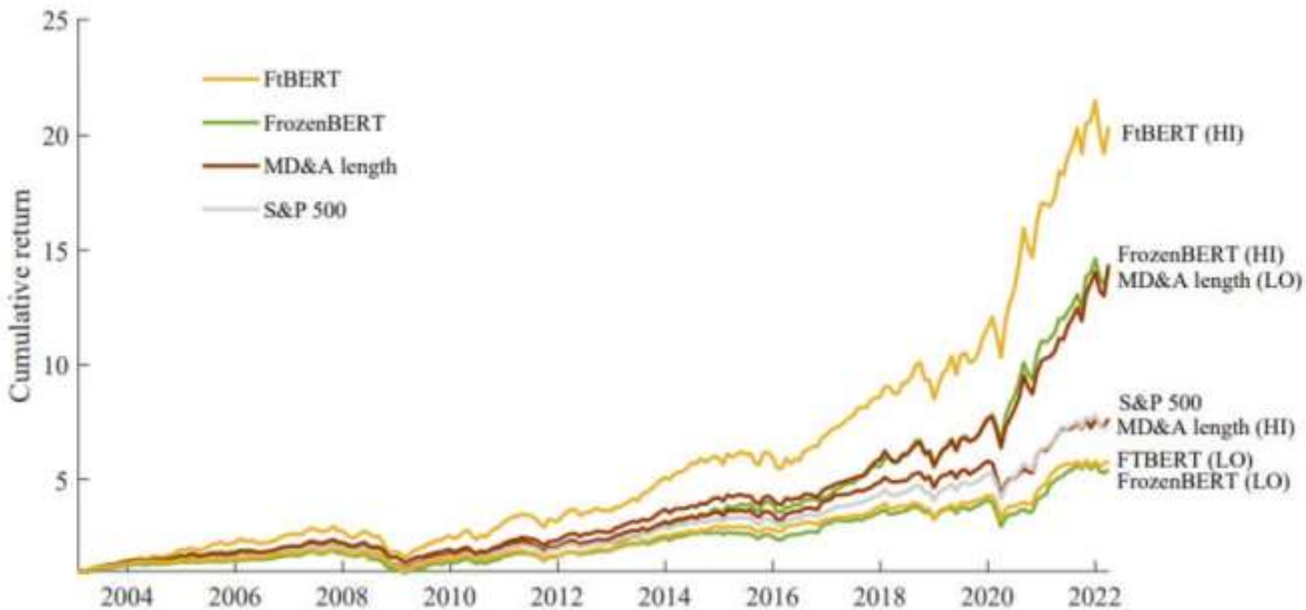
Figure 1: Character Length of MD&A, and Risk Factor sections of 10-K reports over years

From 1994 to 2021- MD&A average expanded 6x and RF 4x from 2006-2021

Source : Chapados et al July 2023, SSRN,"Can AI Read the Minds of Corporate Executives

Outperformance of shorter statements vs long

Performance of portfolios sorted on different MD&A attributes



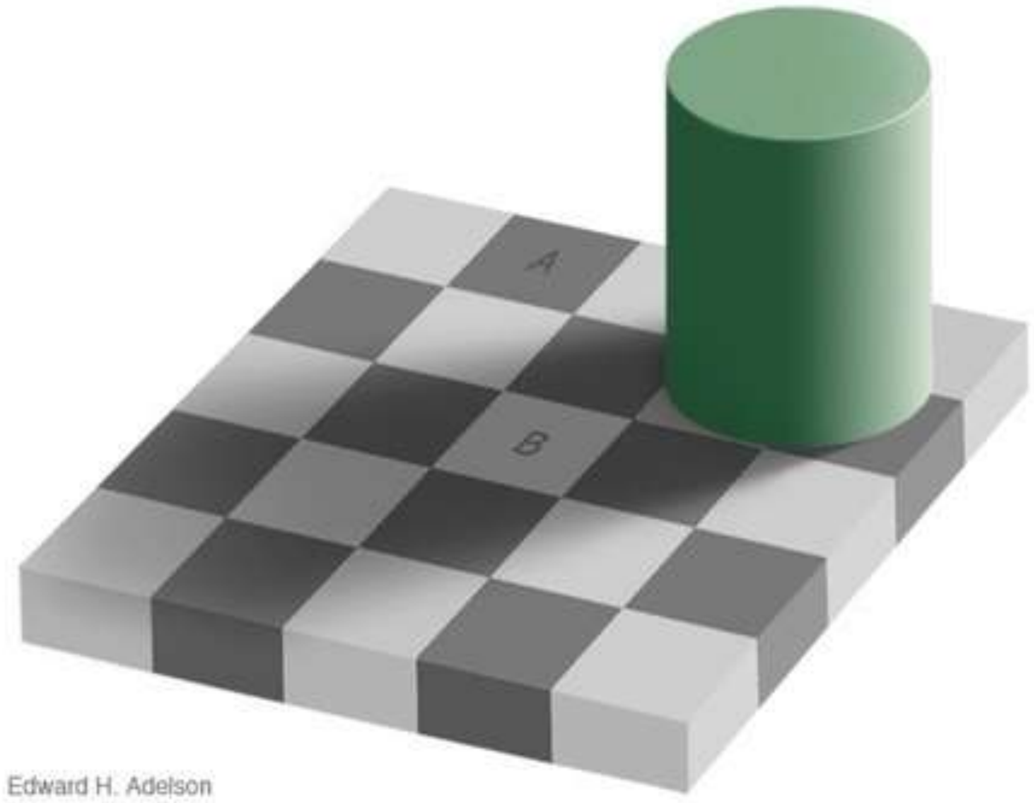
Source: Chapados et al. (2023)

Source : Chapados et al July 2023,' Fine tuned Bidirectional Encoder Representations from Transformers

Cognitive bias and heuristics influencing decision making

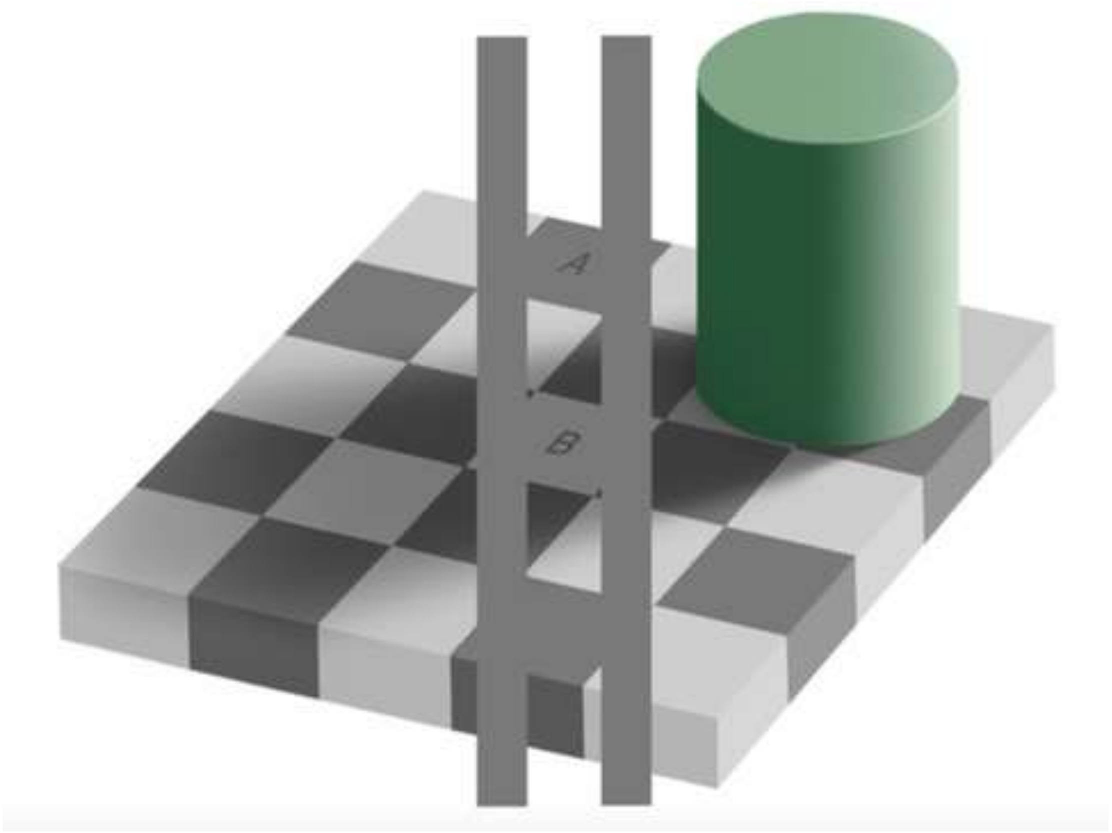
- Representativeness
- Availability
- Anchoring & adjustment
- Overconfidence
- Illusory correlation
- Hindsight bias
- Framing
- Confirmation bias

Heuristics and context



Source : Edward H Adelson, http://persci.mit.edu/gallery/checkershadow

Need for reference framework



Source : Edward H Adelson, http://persci.mit.edu/gallery/checkershadow

Anchoring : analyst forecasts

Source: Clarkson et al. (2020)

Peter Clarkson analysed c. 1.3 million target price forecasts for US Stocks made and also at sentiment and psychological markets like the 52-week high of the share price.

Source: Clarkson et al (2020) per Joachim Klement, Liberum, 17.3.2021

Anchoring & bias

Using earnings forecasts alone creates target price forecasts that are predictive of future share price performance.

Non-fundamental influences like 52-week highs distort the target price forecast.

The higher the 52-week high of a stock relative to its own history or the more optimistic investor sentiment is, the more the target price will be subject to optimism bias. Higher past share prices anchor analysts to higher target prices and thus to less accurate forecasts.

Target price forecasts are useful when share prices are low and investor sentiment is subdued, but as markets climb, analyst target prices become less useful as a predictor of future share price developments.

Source: Clarkson et al (2020) per Joachim Klement, Liberum, 17.3.2021

Priors & base rates

Bayesians are always thinking about the *context* of evidence, not just the evidence itself.

The essential insight of Thomas Bayes is that the likelihood of an event occurring is always conditional on *prior* likelihoods.

Bayesians …….seek to fuse the new with the already known, and to weight each appropriately.

This helps you decide what to pay attention to. If I believe something is very probably true, I won’t be that interested in new evidence that says it is, since I’ve already priced that in. I’ll also demand a lot of counter-evidence to be persuaded it’s not.

The Bayesian is always asking, *just how much do I need to update my belief about reality, given this new information*? A little, a lot, not at all?

Bayesians typically put numbers on their guesses about reality - on their priors, updates, and predictions

Source: Ian Leslie; Ruffian 13.3.2021

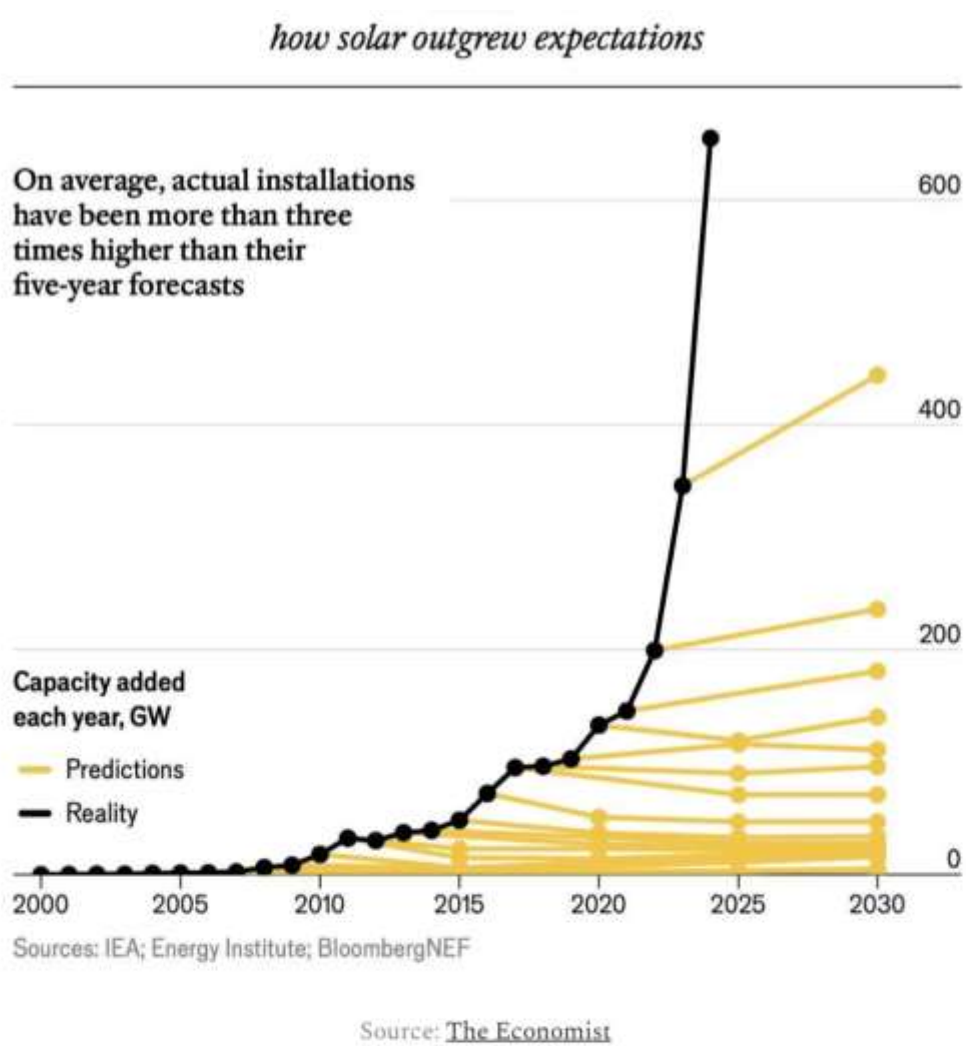
Bayes is helpful approach to investment analysis

At their core, Frequentist and Bayesian statistics primarily differ in how each methodology approaches:

	Frequentists	**Bayesians**
Hypothesis testing	Set null and alternative hypotheses and use statistical tests to assess evidence against the null.	Consider prior beliefs when forming hypotheses.
Probability interpretation	Frame probability in terms of objective, long-term frequencies.	Interpret probabilities subjectively and update them as new data is collected.
Sampling	Emphasize random sampling and often require fixed sample sizes.	Can adapt well to varying sample sizes since Bayesians update their beliefs as more data comes in.

Experts & Forecasting

Solar Projections



Source : The Economist

IEA Coal Projections: China coal use underestimated

Dotted lines show annual forecasts
Red line actual outturn

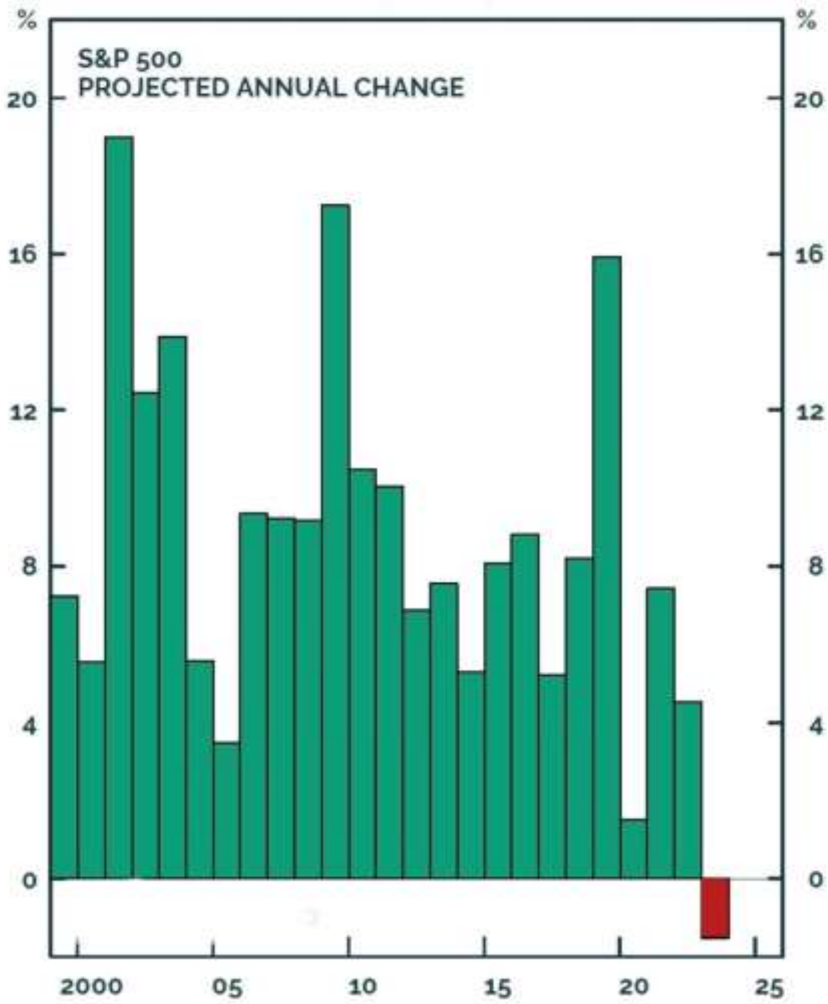
Source : IEA

SAGE: UK Scientific Advisory Group

Mr in December 2021, SAGE warned that under “Plan B” restrictions — which the Government ultimately maintained — daily deaths could peak between 600 and 6,000. The eventual peak was just 202, falling far below the lower bound of the prediction.

Source : Covid Inquiry

Strategists forecast fall for Equities in 2023



First loss forecast this century

Gamblers Fallacy?

Source: Peter Berezin BCA Research, Bloomberg data

Why are experts often wrong?

- Misunderstanding probabilities
- Anchoring in initial assessments
- Faulty search processes
- Overconfidence
- Over-complexity / overfitting
- Biased incentives
- Analysis driven by beliefs

Expert excuses

Forecasting expert Philip Tetlock has spent his career studying predictions and the typical excuses people make when they're wrong.

He came up with five excuses experts make on a regular basis when their predictions don't work out:

(1) The "if only" clause: *If only this one thing would have gone my way I would have been right.*

(2) The "ceteris paribus" clause: *Something completely unexpected happened so it's not my fault.*

(3) The "it almost occurred" clause: *It didn't happen, but I was close.*

(4) The "just wait" clause: *I'm not wrong, I'm just early.*

(5) The "don't hold it against me" clause: *It's just one prediction.*

And of course, when the market does inevitably crash, be sure to take credit for your broken clock prediction.

Source: Prof PhilipTetlock & Barbara Mellers, Good Judgement Project, 2021

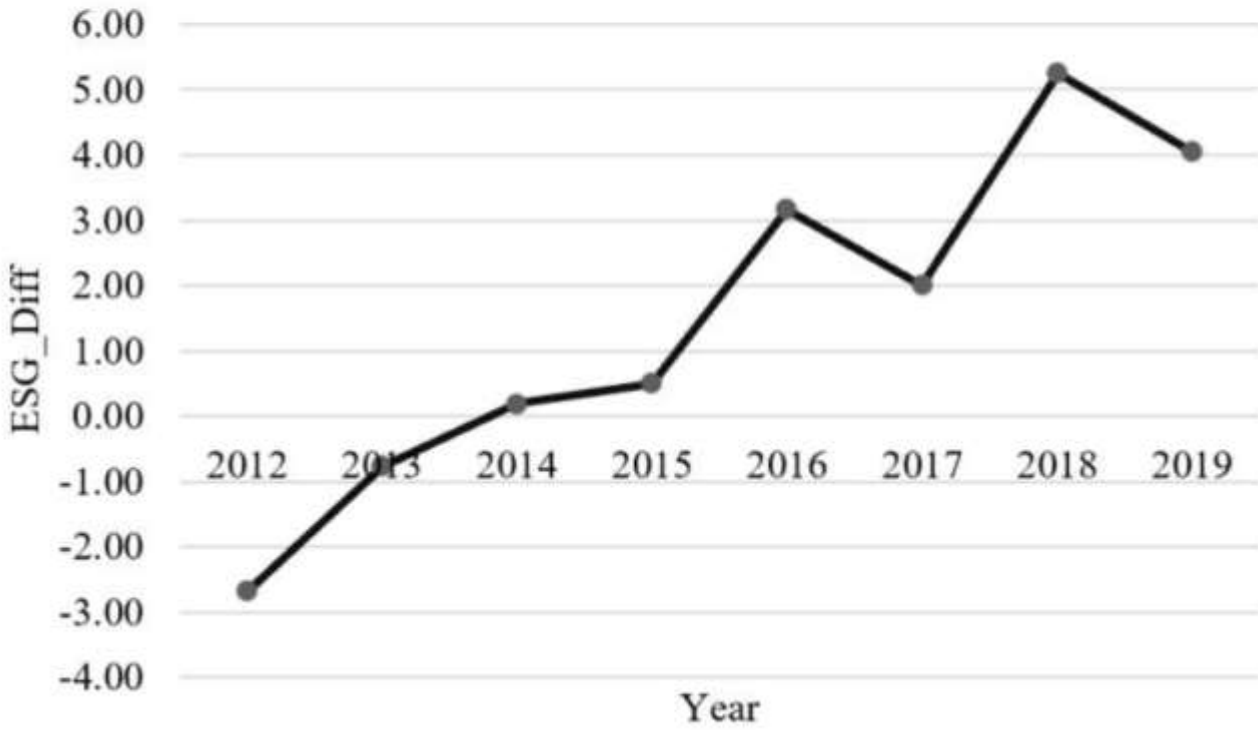
Incentives & Reward

Corporate incentives : Alternative Performance Measures

- Most prioritise growth incentives over ROE
- Few companies have ROCE or ROE in LTIP
- Most have (adjusted) earnings growth
- Risk measures rare
- Stock-based compensation and FCF presentation in Tech

Why diverge? Puzzle in ESG ratings industry

Difference in ESG ratings between MSCI and Refinitiv



Source: Agrawal et al. (2023).

Source: Klement, November 2023; Agrawal et al, Columbia Business School Sept 2023

Are there commercial incentives in ESG?

- Researchers noted widespread disagreement across ESG ratings
- Examined whether revenue from ESG indices might impact ESG ratings
- 60% of MSCI ESG from selling index licences; but most of Refinitiv revenues from selling data
- Raters with strong index licensing incentives issue higher ESG ratings for firms with better stock performance and those added to their ESG indices, c/f raters with weaker licensing incentives

Source: Klement, November 2023; Agrawal et al, Columbia Business School Sept 2023

Beliefs :

Worldview, Culture and Faith

Worldview & Beliefs

A collection of attitudes, values, stories and expectations about the world around us, which inform our every thought and action.

Worldview is expressed in ethics, religion, philosophy, and scientific beliefs. A worldview is how a culture works out in individual practice.

Dispositions are the natural tendencies of each individual to take on a specific position in any field.

Tend to be hardwired in adults

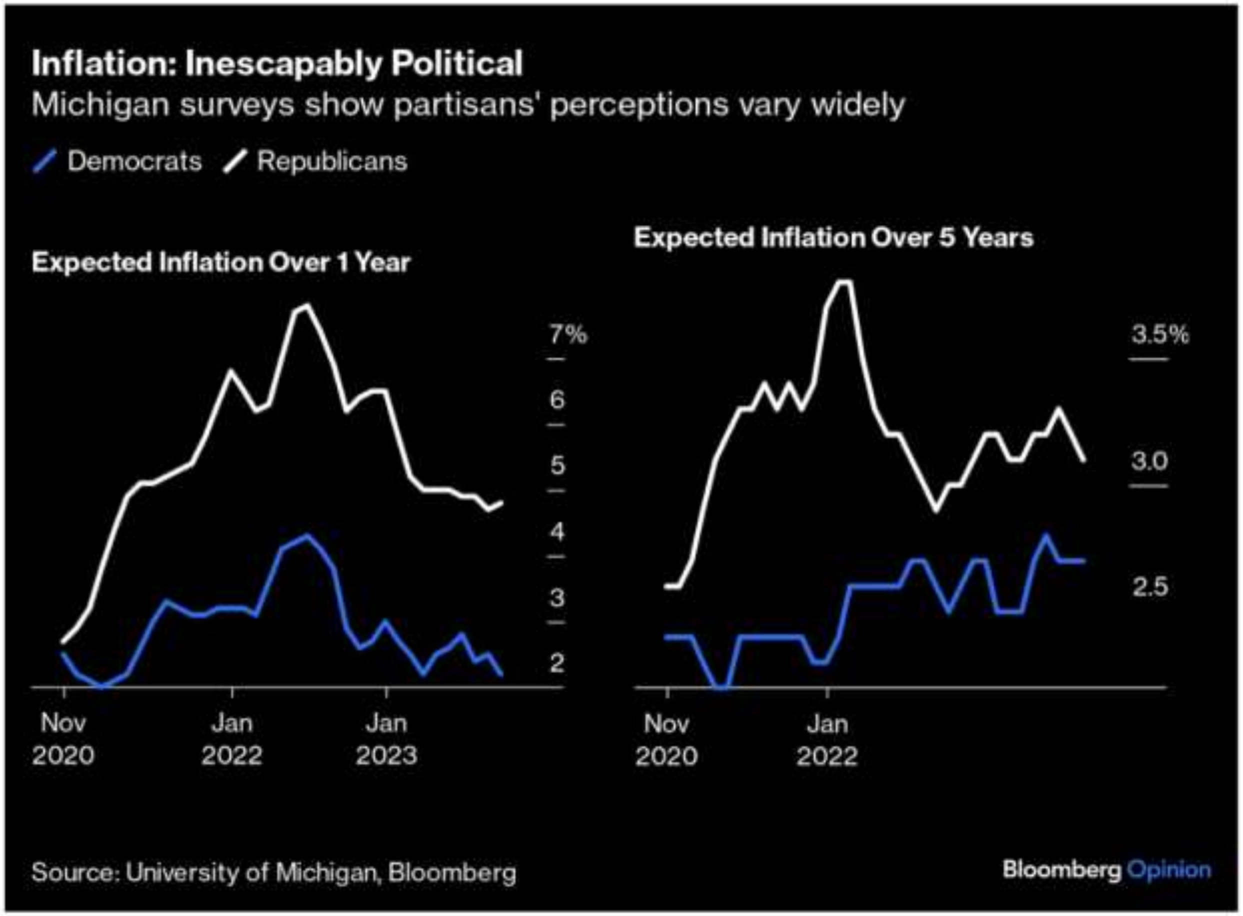
Source: James Sire, 2004

Question of Belief

Delicacy or abomination? It is a question of belief (image via Ideogram)

Source : Ideogram

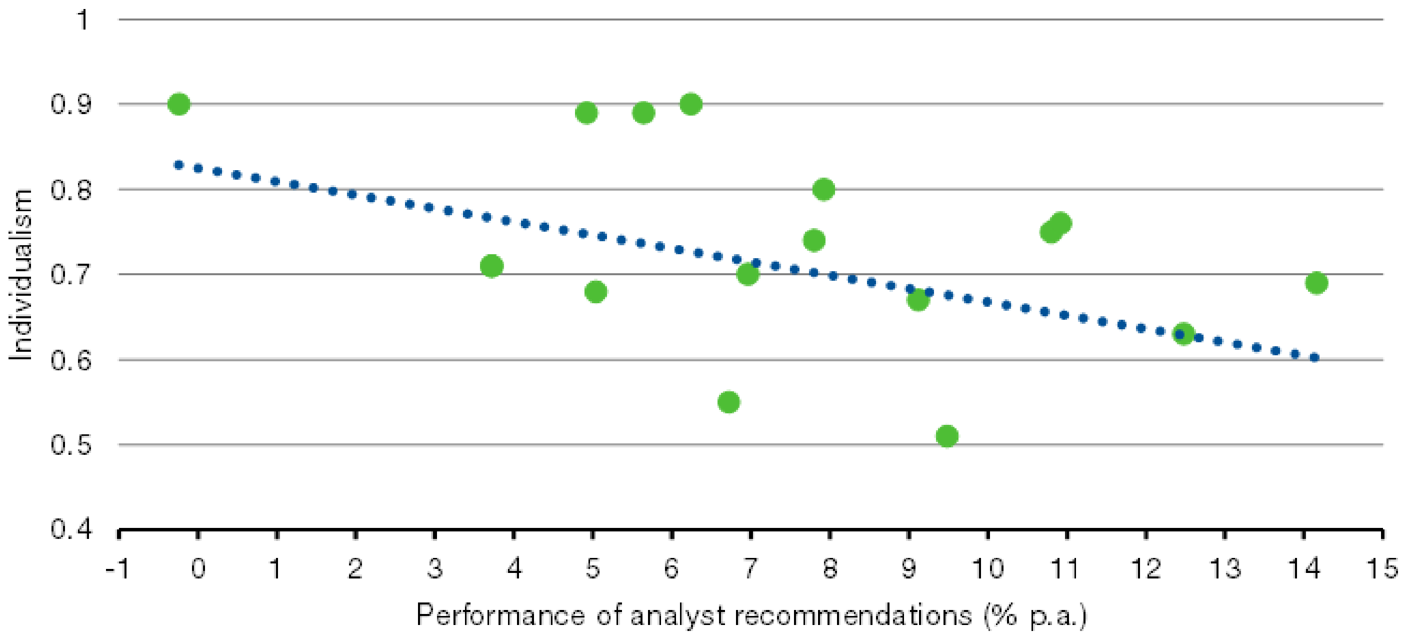
Belief impacts how we interpret the World



Source : Bloomberg, University of Michigan January 2025

Analyst cultural bias

Figure 1: Analyst recommendations and country individualism

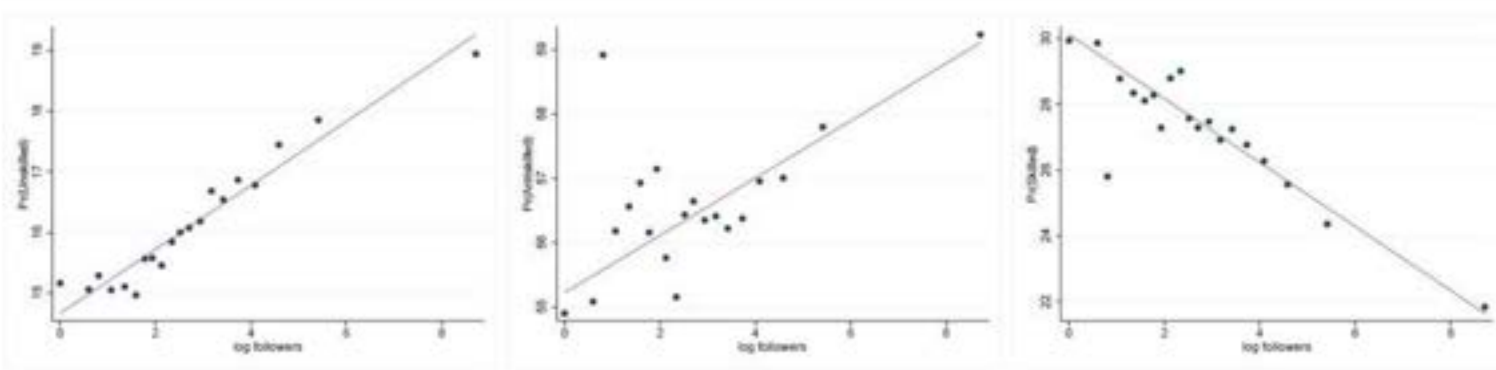


Source: Hofstede, Azevedo and Muller (2020).

Source: Hofstede, Azevedo and Muller (2020)

Bad Finfluencers gather more Followers

Probability of skill vs number of followers



The plots show binscatter plots of the probabilities of users being skilled, unskilled, and antiskilled, respectively, versus the natural logarithm of the number of followers.

Source: John Authers, Bloomberg; Kakhbod et al, Swiss Financial Institute, SSRN, April 2023

Living in their own Bubbles

- 18% are skilled, 1% unskilled & 81% antiskilled
- Antiskilled informative in sense of ‘Do the opposite of what I say’.
- Variation between channels; Seeking Alpha better than StockTwits
- Antiskilled advice creates overoptimistic beliefs mostly, and swings in followers’ belief bias
- Antiskilled cause excessive trading and inefficiency
- Antiskilled ride return momentum and social sentiment momentum
- Followers attach to similar behavioural traits and values
- Social media users predominantly receive information that confirms their existing beliefs (information siloing)

Source: Kakhbod et al, Swiss Financial Institute, SSRN, April 2023, sample 29000 StockTwits influencers

Be Sceptical of your own Tribe

None of us ever wholly think for ourselves: we learn from others, in big and small ways, all the time.

I do think the world divides into those who are able to critically reflect on the biases, errors and distortions of ‘people like me’ and those who don’t or can’t.

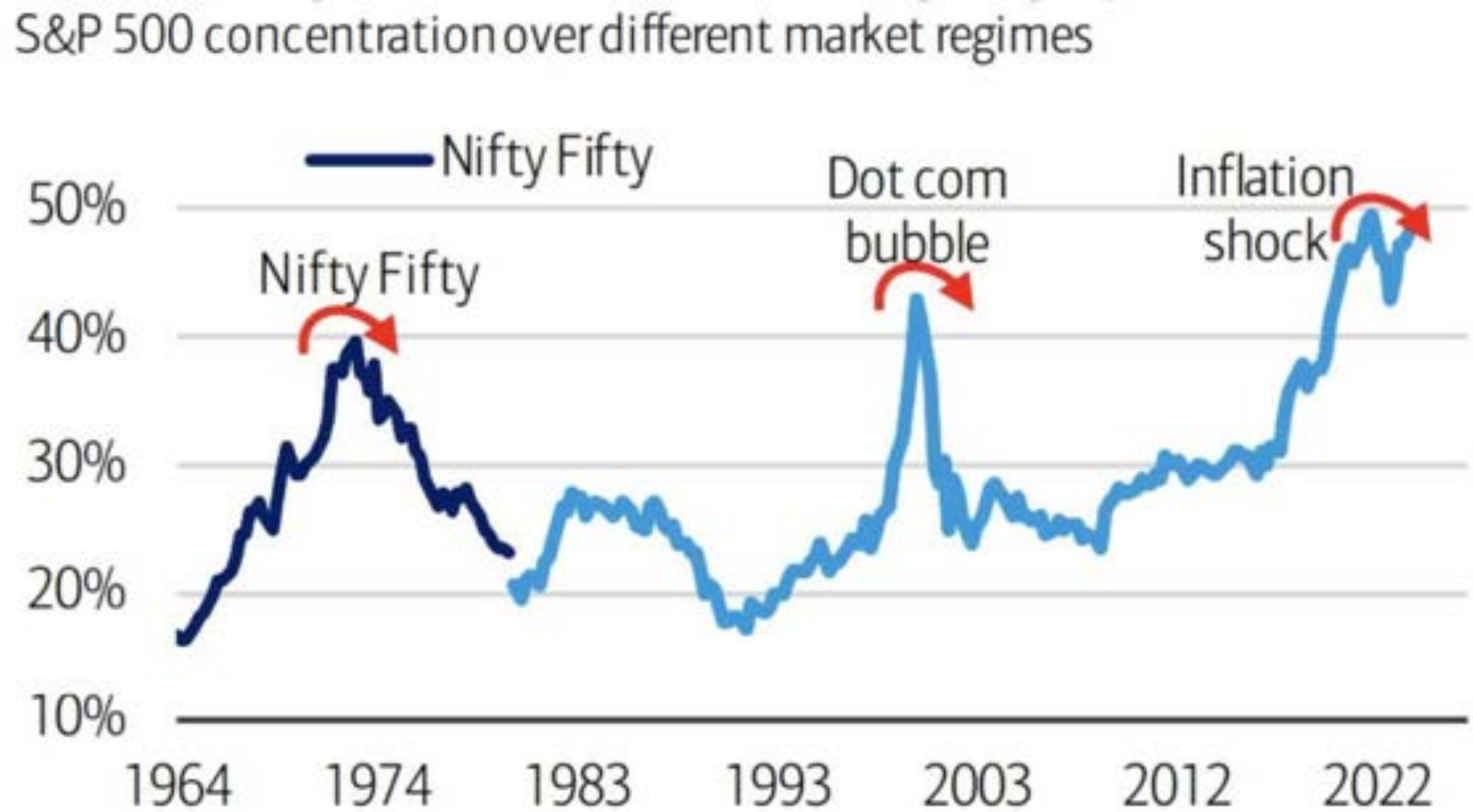
It’s perfectly possible to do so without abandoning your tribe, but people have a deep fear of being outcast for deviation from group orthodoxy, and as a result this kind of critical distance is depressingly rare.

Those who are ‘centrist’ or moderate in outlook have a particular challenge here, since they are most likely to fall into the trap of believing they have no tribe and that they see reality perfectly clearly, undistorted by social influence.

Source: Ian Leslie, “The Ruffian”, Substack January 2024

Bubbles & Market Concentration

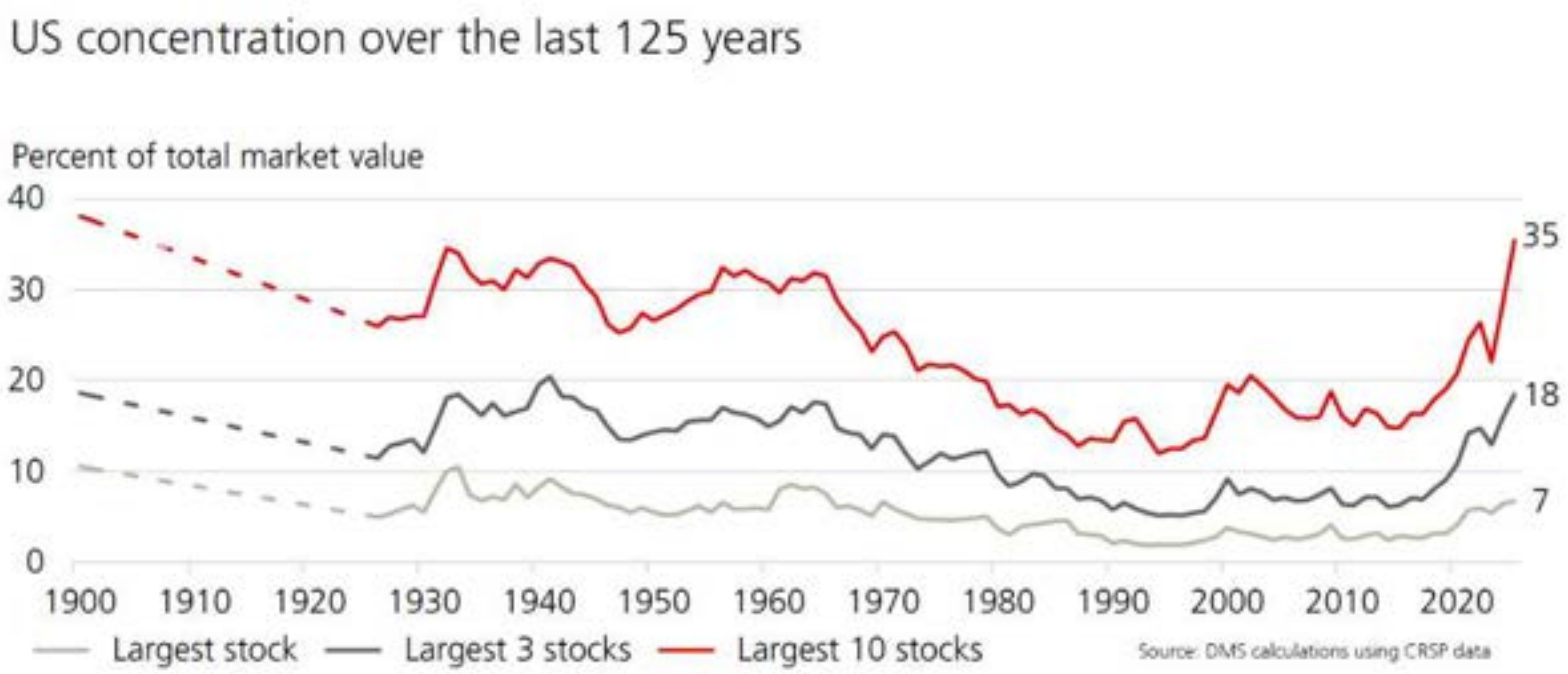
Stockmarket Tech Concentration



Source: BofA Global Research, Global Financial Data, Standard and Poor's, Bloomberg. "New" economy = Tech + Communication Services + Consumer Discretionary

Source: B of A Global Research, Global Financial Data, S&P

US Market concentration since 1900

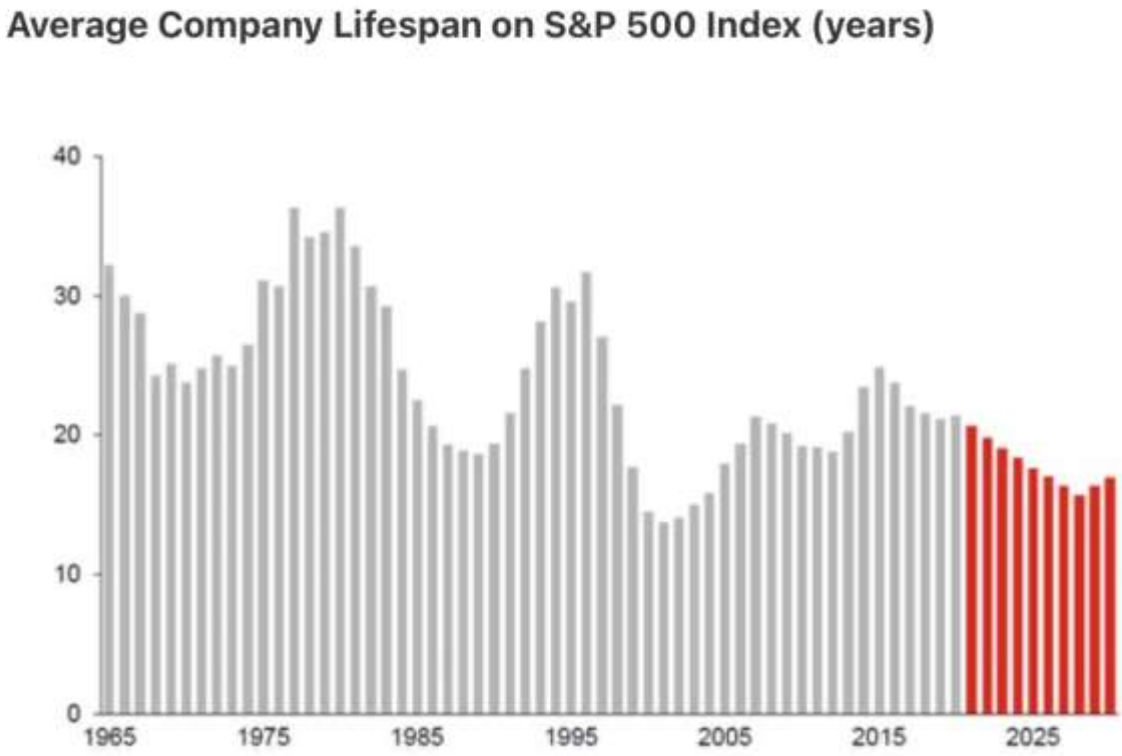


Source DMS, CRSP data

Stockmarket Tech concentration

Source: Ritholtz Wealth Research, Global Financial Data, S&P

Declining S&P corporate lifespan



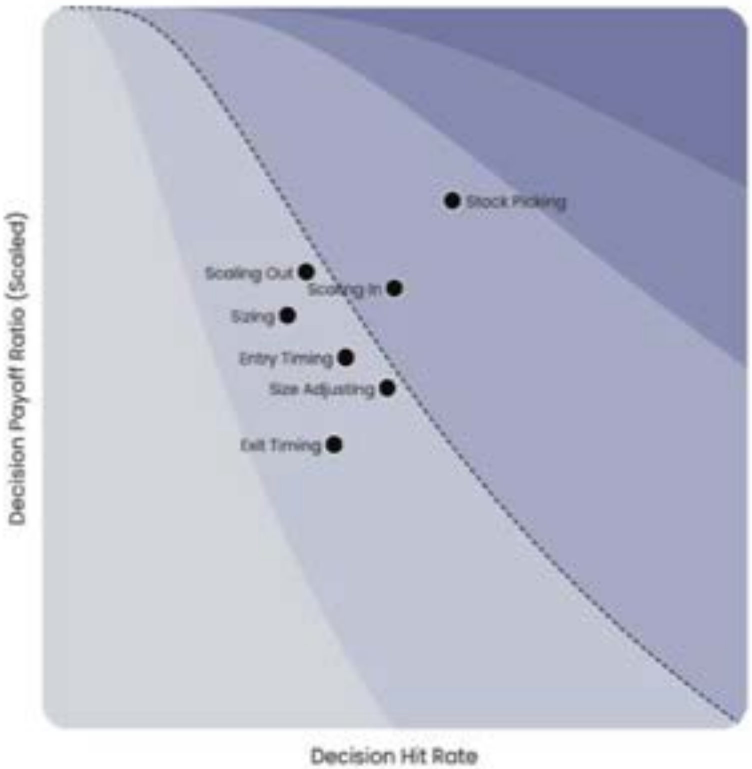
Source :: McKinsey, statista.com

Learning & solutions

Learning from mistakes : Trading analysis

Breakdown by Skill

Skill	BA Score
Stock Picking	69.0
Sizing	41.6
Entry Timing	45.7
Scaling In	55.9
Size Adjusting	48.0
Scaling Out	47.1
Exit Timing	39.1



The Essentia Behavioral Alpha Frontier indicates where a manager is adding value (in this case, decisions around stock picking and scaling in) and where there's room for improvement (sizing, size adjusting, entry/exit timing and scaling out strategies).

Source: Essentia, January 2024

Learning from mistakes : Behaviour nudges

ESSENTIA ANALYTICS

Vulnerable Position Nudge

Dear Henry,

Your Vulnerable Position Nudge is designed to call your attention to *relative losers* because historically, most investors exhibit **Loss Aversion** behaviour when *holding on.*

This Week's List

Long

- **Over 20 bps**
  - **Triggering for the 1st time.**
    - REC-IT [1]
  - **Triggering more than 1 time.**
    - UNP-US [3]
    - PRX-NL [4]

What Should I Do?

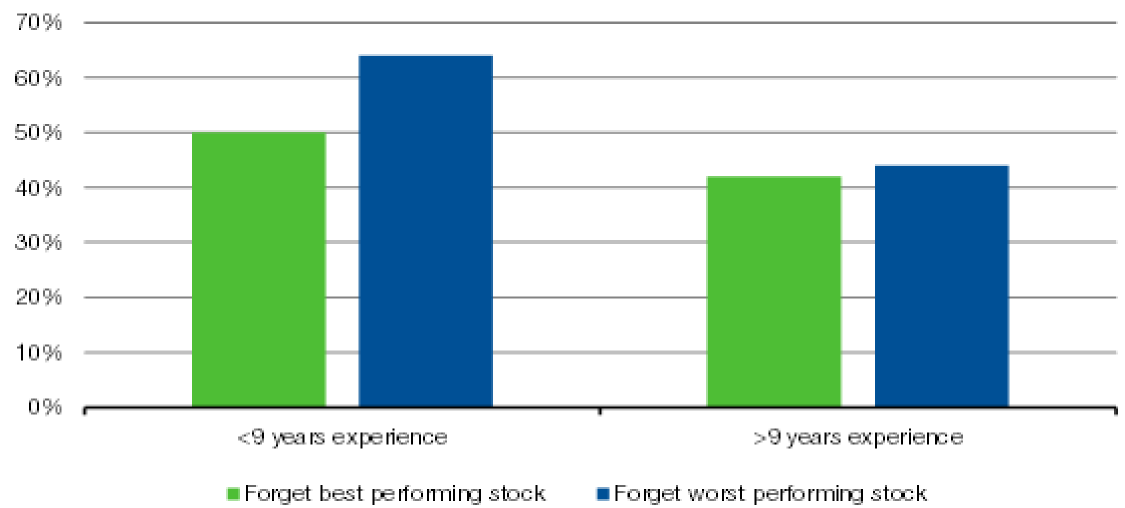
- Take a minute to make a deliberate decision about what to do with each of the names on this list
- Click on any of the highlighted tickers if you would like to answer the questions you have told us matter the most

Source: Essentia, January 2024

Learning from mistakes : recall

You can improve more by remembering and examining past mistakes than past successes. For inexperienced investors, the first lesson to learn should thus be to focus on your mistakes. Once you have learned that lesson, your learning curve becomes immediately much steeper.

Figure 1: Recall of best and worst investment



Source: Li and Rong (2020)

211 individual investors in Hong Kong who are at least 25 years old and had various degrees of investment experience were asked if they could remember their best and their worst investment. Researchers were more interested in how well investors recalled their worst investments.

Source: Joachim Klement, Liberum, 15.12.2020

Narcisistic Fund Managers

- 34% more likely to deviate from agreed style
- Take more risk, misjudge failure probabilities
- Underperfom 1% per year, risk adjusted
- Overweight small cap and growth
- Emphasise ESG
- Team working mitigates style inconsistency, not risk

Patterns echo research on narcissistic CEOs

Source: Scheld, Stolper & Bauer, Fund Manager Narcisism, SSRN 2022

Long term investing

- Understand your own comfort zone
- Keep a long term perspective
- Minimise trading and costs
- Ignore forecasters
- Keep a simple & robust structure
- Focus on businesses with good stewardship
- Assess sustainability and resilience

Stockmarket volatility and individual psychology exact a toll on the unprepared

Kahneman's Advice

Asked to name the most important single lesson from all of his research - Kahneman reflected, then said,

"Nothing in life is as important as you think it is, while you are thinking about it.“

We have an innate tendency to inflate the importance of what's happening right now. This one comes in particularly handy when you're feeling anxious about current events, or about something upsetting in your personal life, or when you're trying to judge the impact of the latest news story on future events. Whatever it is, the chances are that in time it will come to seem less significant than it does right now (whether 'now' is this second or this month).

Source: Ian Leslie, “The Ruffian”, Substack January 2024

Thank you for your attention

Further information:

www.linkedin.com/in/colin-w-mclean

Stories can help but more often hinder

We use stories to explain the world:

- Good stories are simple, concrete, intention-based and striking
- But reality is complex, abstract and often the result of chance
- Other things that don't fit fall away by the wayside.

We see the world as much more coherent than it is.

Our chronic discomfort with ambiguity …leads us to lock down safe, comfortable, familiar interpretations, even if they are only partial representations of or fully disconnected from reality.

The world makes less sense than you think. Coherence is a function of the mind not reality.

Source: Kahneman, "Thinking: Fast and Slow"

Stories: Kahneman on coherence & ambiguity

The confidence people have in their beliefs is not a measure of the quality of evidence but of the coherence of the story that the mind has managed to construct.

Coherence means that you're going to adopt one interpretation in general. Ambiguity tends to be suppressed.

Other things that don't fit fall away by the wayside.

We see the world as much more coherent than it is.

Our chronic discomfort with ambiguity …leads us to lock down safe, comfortable, familiar interpretations, even if they are only partial representations of or fully disconnected from reality.

Source: https://www.brainpickings.org/2013/10/30/daniel-kahneman-intuition/

Dealing with criticism

Denial:	It didn’t happen, question the facts, not me, little impact
Perspective:	Reframe a view of issue, explanation
Context:	Under pressure, it was a bad time for me
Motives:	I meant well, did it for the right reasons
Exception:	Don’t judge me on this, it’s not who I am

Dealing with analyst biases in forecasting

- Incorporate underlying base rates
- Make explicit and unambiguous forecasts
- Document forecasts and decisions
- Prompt and accurate feedback
- Reward system that incentivises accuracy (not necessarily money)
- Appraisal by colleagues, superiors and systems
- Provide counter-argument
- Assign probabilities

Updating beliefs

"*When the facts change, I change my mind. What do you do, sir*?“

Attrib., Keynes

“*People who are right a lot of the time are people who often change their minds*”

Jeff Bezos, October 2012

The smartest people are constantly revising their understanding, reconsidering a problem they thought they’d already solved. They’re open to new points of view, new information, new ideas, contradictions, and challenges to their own way of thinking.

Judgement under uncertainty

This article described three heuristics that are employed in making judgements under uncertainty:

(i) Representativeness - usually employed when people are asked to judge the probability that an object or event A belongs to class or process B;

(ii) Availability of instances or scenarios - often employed when people are asked to assess the frequency of a class or the plausibility of a particular development; and

(iii) Adjustment from an anchor - usually employed in numerical prediction when a relevant value is available. These heuristics are highly economical and usually effective, but they lead to systematic and predictable errors. A better understanding of these heuristics and of the biases to which they lead could improve judgements and decisions in situations of uncertainty.

Source: Amos Tversky & Daniel Kahneman, "Judgement under uncertainty: heuristics and biases: Biases in judgment reveal some heuristics of thinking under uncertainty", Science, 27 Sep 1974 Vol 185, Issue 4157 pp. 1124-1131

Memory fails us

- Hindsight bias – prevents us learning from the past
- Fundamental attribution error
- Emotionally significant events distort memory
- Inattentional blindness – fail to recognise some factors
- Egocentric bias – we edit our memories

The eye sees what the mind thinks : Goethe

What to document

- Key questions and concerns
- Contrary information & less salient facts
- Situation and context; mood
- Choices – alternatives
- Consensus
- Expectations – exit strategy

Dealing with psychological biases

Psychological bias	Effect on investment behaviour	Action
Overconfidence	Trade too much Take too much risk	Set annual trading limits, evaluate record objectively, trading records, avoid sector switches Keep similarly sized portfolio holdings Reduce info collected Incorporate base data Reduce forecasting Look at evidence against Provide counter arguments Report risks to analysis
Get even, Endowment effect (anchoring on cost)	Take too much risk trying to break even	Pay less attention to cost of investment / book value Run winners (cut losses) Highlight values, not changes

Dealing with psychological biases

Psychological bias	Effect on investment behaviour	Action
Familiarity	Think companies that you know seem better and safer	Control your portfolio exposure to brand names, consumer sectors and premium-rated companies. Test via upgrades/downgrades, multi-factor analysis. Focus on facts, rather than stories.
Framing & priming	Influenced by how information is presented	Read reports backwards or systematically
Representativeness	Think things that seem similar must be alike. So a good company must be a good investment	Own some recovering companies, and some that are not at share price relative peaks Positive short term price momentum / bad long term price momentum

Dealing with psychological biases

Psychological bias	Effect on investment behaviour	Action
Group behaviour/ social context	Sub-optimal decisions	Small committees or decision groups; Diverse teams in terms of backgrounds, roles and risk aversion Contributions based on expertise, not rank Poll team or committees Collect privately-held info in advance Ensure challenge, include critics Gather facts on opposing hypotheses Take in input from outsiders Encourage admission of biases; look for systematic biases Reframe options, expose assumptions Pre-mortems and post mortems Document and learn from past decisions

Group heuristics

Group heuristics in the organisational context	
Heuristic	**Description**
Conformity	Individuals with good ideas often change what they say in order to fall in with the majority view.
Biased information pooling	Groups tend to discuss and make use of information that is available to all members and are less likely to exchange and discuss information that is unique to a single individual.
Evaluation apprehension	When individuals feel that they are being judged or evaluated by others in or outside the group, they self-censor their contributions even though these may be constructive and relevant to group goals.
Confirmation bias	Groups focus on information that confirms their initial views and ignore or discount disconfirming information. They often do this to a greater extent than single individuals.
Groupthink	There are particular characteristics of groups that make them vulnerable to poor decision making e.g. they work together often, have a strong leader and do not have structured procedures for making decisions.

Source: Professor John Maule, June 2013 “Understanding Decision Making in Legal Services: Lessons from Behavioural Economics” Legal Services Board / Linstock Communications

Group behaviour : action

- Small committees or decision groups; diverse teams in terms of backgrounds, role and risk aversion
- Contributions based on expertise, not rank
- Poll team or committees
- Collect privately-held info in advance
- Ensure challenge, include critics
- Gather facts on opposing hypotheses
- Take in input from outsiders
- Encourage admission of biases; look for systematic biases
- Reframe options, expose assumptions
- Pre-mortems and post mortems
- Document and learn from past decisions