Week 1:
Psychology and Behavioural Economics

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FI5614 Behavioural Finance

Department of Finance
University of St Andrews Business School

Welcome Poll

Let’s get to know each other!

Get your phone out and please participate in our welcome poll

Outline

Module Overview

Contact Details and Office Hours

Module Coordinator:

- Dr Christian Engels — ce50@st-andrews.ac.uk
- Office: Room 316, Gateway Building
- *For questions: please first consult Moodle page, module guide and announcements*

Office hours:

Thursdays, 10:00am–12:00pm noon, Office 316, Gateway Building

Please book slots via the link on Moodle. If all slots are booked, more will be made available.

General Enquiries: bschoolpgt@st-andrews.ac.uk

Teaching Delivery

Most weeks consist of a **two-hour lecture** followed by a **one-hour tutorial**. Tutorials are delivered in a seminar-style format for discussion, group work and applying concepts.

Activity	Time	Location
Lectures	Thursday, 13:00–15:00	GWY: 116 – Lecture Room 4
Tutorials	Thursday, 15:00–16:00	GWY: 116 – Lecture Room 4

Coming to class prepared is essential:

- Complete assigned textbook chapters *before* each lecture
- Engage with journal articles on the reading list

Material and announcements on Moodle

Main References

Main Textbook:

Ackert, L. F., & Deaves, R. (2010). *Behavioral Finance: Psychology, Decision-Making and Markets.* South-Western, Cengage Learning.

You will need to obtain a copy or check the library for physical copies.

Additional readings:

Housel, M. (2021). *The Psychology of Money: Timeless Lessons on Wealth, Greed, and Happiness.* Harriman House.

Kahneman, D. (2011). *Thinking, Fast and Slow.* Penguin.

Additional resources: Required and further reading will be provided each week on Moodle.

Self-certification of absence

Attendance is a basic assessment requirement. Unavoidable absences must be explained using the University's **Self-Certificate of Absence** via MySaint (My details and development).

What counts as an absence

- Missing an **exam** or any **compulsory** class/activity listed in the module.
- Failing to submit a **compulsory assignment** on time (even with an extension).
- Being unable to study for **>5 consecutive days** or **>15 non-consecutive days**.

How to self-certify

- Submit the self-certificate in **MySaint** within **3 days** of the first day of absence.
- Further information: https://www.st-andrews.ac.uk/students/rules/selfcertification/

Tagging of calculators required for Class Test

For this module: calculators are permitted in in-person class tests/exams, but only if they are **University-tagged** and on the **approved list**. Untagged calculators will be removed by invigilators.

We will tag calculators after the Week 2 lecture – please bring your calculator.

What you need to do

1. Check your model is approved (see list).
2. Bring your calculator and student ID to Week 2 Lecture for tagging. If already tagged by another School, no re-tagging needed.
3. Keep the tag on your calculator for all assessments.

Key rules

- Only the models on the list are allowed.
- **No exceptions.**

Approved calculator models

- Sharp `EL-531`
- Casio `FX-85GTCW`
- **Helect-2**
- **Renus 2-line**
- Casio `fx-83GTX`
- Casio `fx-83GT CW`
- Casio `fx-85GTX`
- Casio `fx-85GT CW`

Assessment Overview

Continuous assessment (100% coursework):

Assignment	Week	Deadline	Weight
In-person Class Test	5	Thursday, 1–2pm	30%
Reading Diary*	11	Monday, 12 noon	40%
2000-word Essay	15	Monday, 12 noon	30%

* Portfolio of **2 entries**, each **800 words** (1,600 words total)
- Class test location: Purdie Building: Lecture Theatre A

AI Policy

Dimension	Description	Status	Notes
Content generation	Drafting essays, emails	Red	Not allowed
Research	Literature searches, fact-checking	Orange	Use Scopus, Google Scholar, SSRN
Learning support	Tutoring, concept explanations	Green	Allowed
Writing assistance	Editing, grammar, translation	Green	Allowed
Problem-solving	Maths, coding, exercises	Green	Allowed
Creative work	Brainstorming, ideation	Orange	Make it your own
Test preparation	Flashcards, mock questions	Green	Allowed

Full policy: University Good Academic Practice

Module Schedule

Week	Topic	Ch.	Tut.
1	A Very Short Introduction to Behavioural Finance	4	—
2	Heuristics and Biases	5	✓
3	Expected Utility Theory	1	✓
4	Prospect Theory, Framing and Mental Accounting	3	✓
5	Class Test plus Overconfidence and Emotional Foundations	6, 7	—
	Spring Vacation		
6	Asset Pricing, Market Efficiency & Agency Relationships	2	✓
7	Implications of Heuristics & Biases for Financial Decisions	8, 9	✓
8	(In)efficient Markets: Behavioural Explanations for Anomalies	13, 14	✓
9	Guest Lecture	—	—
	Week 10: Independent Learning Week		
11	Understanding Retirement Savings Behaviour	17	✓
12	Debiasing, Education and Client Management	18	✓
13–14	*Revision*		
15–16	*Semester 2 Examinations*		

Questions?

Mathematical requirements:

- Basic maths and algebra necessary
- Finance concepts revised (expected utility theory, market efficiency, CAPM)

E-resources:

- Lecture notes, tutorials, exercises and readings on Moodle
- Online reading list available

Important links:

- Business School PGT Student Hub
  Key contacts, PGT Handbook, Extensions and Special Circumstances

Equality and diversity: Pronouns “he/she/they” used interchangeably in examples

A Very Short Introduction to Behavioural Finance

Psychology and Behavioural Economics: Two Systems

Required readings:

- Ackert & Deaves, Chapter 4 (main)
- Kahneman, D. (2011). *Thinking Fast and Slow*, Part I
- Housel, M. (2021). *The Psychology of Money*, Chapters 1–2

Topics covered:

Two-system approach to judgment and choice:

System 1: automatic and quick

System 2: deliberate and slow

Traditional Finance

Finance is built on the assumption of investors' *rationality*:

- People always make *rational* decisions (= in accordance with theory)
- They are unbiased in their predictions about the future

But if we look at our behaviour more carefully...

Our judgments are often biased and our decisions are not in our best interest:

- We do not process all information
- We process some information incorrectly
- Our choices are affected by our emotional states

What is Behavioural Finance?

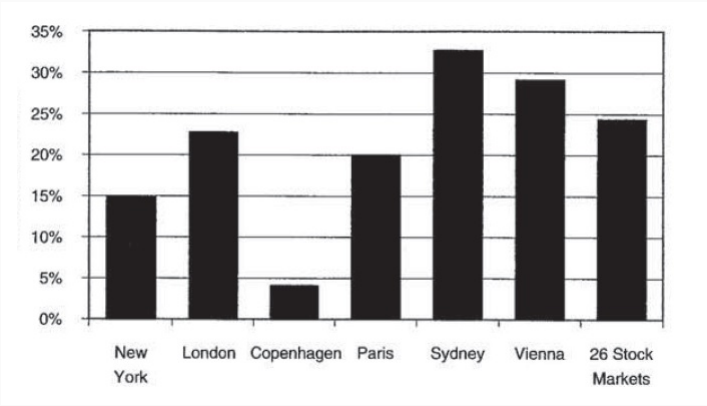
Behavioural Finance studies how deviations from rationality affect investor behaviour, corporate decisions and financial markets.

Three main contributions:

- Documenting actual financial agents' behaviour
- Documenting price patterns that seem inconsistent with traditional models
- Deviations from rationality are large, systematic and predictable enough to provide new descriptive theories

"There are many ways in which people can be irrational but only one in which they can be rational"

Sunshine and Stock Returns



Annualized difference in return between sunny and miserable weather days.

Source: *The Psychology of Investing* by John R. Nofsinger; Hirshleifer and Shumway (2003)

Aim of the Module

What we will study:

- Certain biases that appear systematically in various contexts and are well understood
- Implications of these biases for financial markets, investors' and companies' behaviour
- Judgement and choices under risk and uncertainty

Does that mean people are irrational?

No, it means human behaviour cannot be completely described with a rational agent model.

Is Traditional Finance wrong? Should we forget it?

No. Any model is an approximation of reality. For many phenomena, behavioural considerations are not very important and only lead to unnecessary complications.

What does it mean to say that people behave rationally?

"Econs" (Rational Economic Agents):

- Use resources to maximize their own utility, in their self-interest
- Make fully-informative decisions using all available information
- Make independent choices, not influenced by social connections
- Not affected by emotions, and fully able to resist temptations

Financial Literacy Quiz

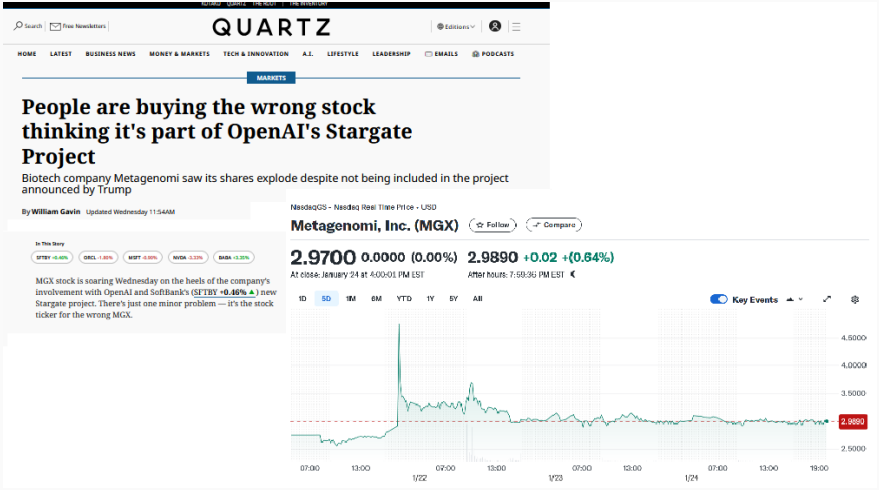
Understanding behavioural biases is especially important given widespread gaps in financial literacy. Research shows that many people struggle with basic financial concepts, making them more susceptible to cognitive biases and poor financial decisions. By recognising how intuitive judgements can lead us astray, we can design better financial products, policies and personal strategies.

Please use your phone and login to the financial literacy quiz!

Is panic-buying rational?

Claim that panic-buying is an example of people behaving irrationally because they buy things that they do not need

Do we always behave rationally?



Do we always behave rationally?

THE WALL STREET JOURNAL.

MARKETS | JOURNAL REPORTS: PERSONAL INVESTING

How the Olympics Could Affect the Stock Market

Studies show that losses or sports events have an investing impact—another way that our moods can mess with financial success

Investors tend to react to the agony of defeat.

PHOTO: DANIEL GOETZHABER/ZUMA PRESS

By Mark Hulbert

Feb. 3, 2022 11:00 am ET

Do we always behave rationally?

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“Humans” (Real People):

Sometimes,

- We do not process all information
- We process some information incorrectly
- Our choices are affected by emotions, and we lack self-control
- We are social beings, influenced by others and altruistic

Though we are not acting randomly: We make systematic and persistent deviations from rational choice

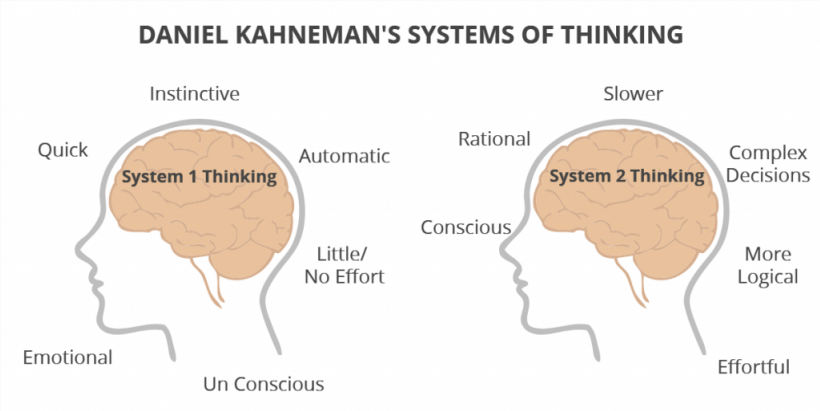
- Glance at this picture:

- Glance at this picture:

- **Now solve this:** $17 \times 24 = ?$

Two-System Approach to Judgment and Choice

Observed human behaviour is the outcome of the interaction between an **emotional** (System/Type 1) and a **cognitive** (System/Type 2) module in the brain.



Two-system approach to judgment and choice

- Focus on the voice of a particular person in a crowded and noisy room.
- Maintain a faster walking speed than is natural for you.
- Monitor the appropriateness of your behavior in a social situation.
- Count the occurrences of the letter *a* in a page of text.
- Check the validity of a complex logical argument.

- Detect that one object is more distant than another.
- Orient to the source of a sudden sound.
- Complete the phrase "bread and..."
- Make a "disgust face" when shown a horrible picture.
- Detect hostility in a voice.

System 1 and System 2

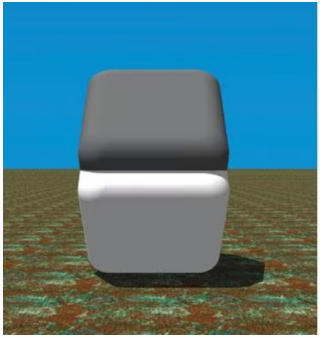
Key characteristics:

- System 1 generates complex patterns of ideas, but only System 2 can construct thoughts in an orderly series of steps
- We identify ourselves with System 2, the conscious reasoning self that has beliefs, makes choices, and decides what to think about and what to do
- System 1 plays a much more important role in decision-making than we usually think
- System 1 and System 2 are fictitious characters: no specific parts of the brain are responsible for them

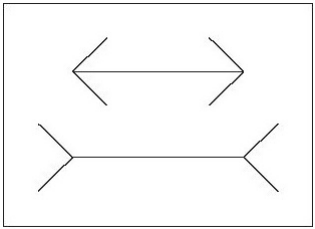
Sometimes they enter into conflicts...

Conflict Between Systems

Optical illusions show the two systems conflicting:



Cornsweet Illusion



Müller-Lyer Illusion

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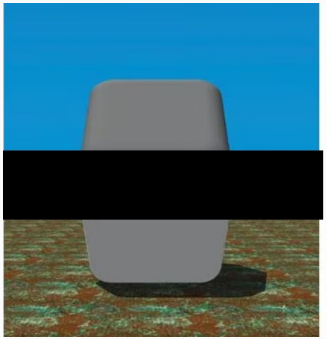

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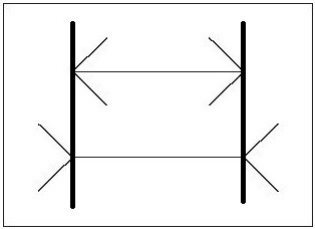

Müller-Lyer Illusion

Overriding System 1 Responses

System 1 operates automatically and cannot be turned off

Errors of intuitive thought can be prevented by monitoring and costly willpower by System 2:

1. Willpower is a limited resource and can be depleted
2. Cognitive load reduces the ability to exert willpower
3. Willpower can be depleted by stress

However: System 2 is too slow and inefficient to serve as a substitute for System 1 in making routine decisions or saving our lives

Properties of System 2: Selective Attention

- **Watch this video:** The Selective Attention Test

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- Chabris, C. & Simons, D. (2011). *The Invisible Gorilla: How Our Intuitions Deceive Us*.

Properties of System 2: Selective Attention

- **Watch this video:** The Selective Attention Test
- Chabris, C. & Simons, D. (2011). *The Invisible Gorilla: How Our Intuitions Deceive Us*.
- **Key insight:** The response to mental overload is selective and precise. System 2 protects the most important activity.

Properties of System 2: Self Control

Self control and cognitive effort draw from the same mental resources.

Activities imposing high demands on System 2 require exertion of self-control, which is depleting and unpleasant.

Example:

- We have a choice between chocolate cake and fruit salad
- We are likely to yield to temptation when challenged by a demanding cognitive task (e.g., retaining seven digits in memory)

Classic study: The Marshmallow Experiment

Properties of System 2: Ego Depletion

The exertion of self-control is depleting and unpleasant.

Willpower stock decreases with stress:

Study: 8 parole judges

- Cases presented in random order, 6 minutes per case
- Default decision is denial (35% of requests approved)
- Judges had three food breaks

The proportion of approved requests spikes after each meal

Key finding: Tired and hungry judges tend to choose the easier default position.

Properties of System 2: Laziness

The Bat and Ball Problem:

A bat and a ball cost $1.10.
The bat costs one dollar more than the ball.
How much does the ball cost?

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Intuitive answer: 10 cents

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Intuitive answer: 10 cents

Correct answer: 5 cents

More than 50% of students at Harvard, MIT, and Princeton gave the intuitive answer

A “lazy” System 2 often endorses the intuitive response of System 1 without much scrutiny

Properties of System 1: Association of Ideas

Associative activation:

- An idea activates many ideas which in turn activate others (this happens all at once)
- Words evoke memories, which evoke emotions, which in turn evoke facial expressions and other reactions
- Associative thinking is hidden from our conscious selves
- Essential feature is *coherence*

Example: Being amused tends to make us smile, but smiling tends to make us feel amused.

Properties of System 1: Priming

If an idea is currently on your mind, you will be quicker than usual to recognise related ideas.

Study: Finance professionals were primed with either boom or bust scenarios, then their risk aversion was tested.

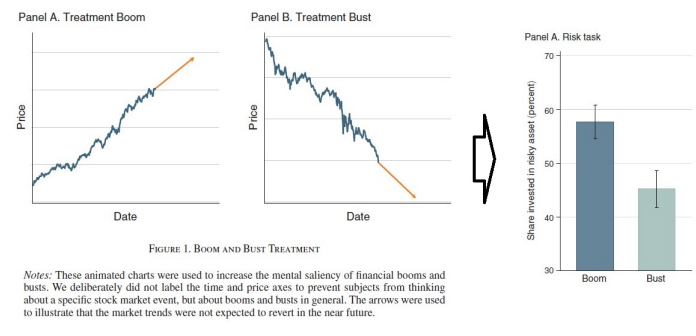

FIGURE I. BOOM AND BUST TREATMENT

Notes: These animated charts were used to increase the mental saliency of financial booms and busts. We deliberately did not label the time and price axes to prevent subjects from thinking about a specific stock market event, but about booms and busts in general. The arrows were used to illustrate that the market trends were not expected to revert in the near future.

Source: Cohn, Engelmann, Fehr, and Maréchal (2015)

Properties of System 1: Jumping to Conclusions

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The shape is ambiguous, but we jump to conclusions about its identity without becoming aware of the ambiguity.

When uncertain, System 1 bets on an answer:

- The bets are intelligent and guided by experience
- Recent events and the current context have the most weight
- A definite choice was made, but we did not know it

If the situation is unfamiliar or stakes are high, errors can be prevented by deliberate intervention of System 2.

Properties of System 1: Halo Effect

Halo Effect: The tendency to like or dislike everything about a person, including things we have not observed.

Who do you like most?

Person A: intelligent, industrious, impulsive, critical, stubborn, envious

Person B: envious, stubborn, critical, impulsive, industrious, intelligent

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Who do you like most?

> **Person A:** intelligent, industrious, impulsive, critical, stubborn, envious
>
> **Person B:** envious, stubborn, critical, impulsive, industrious, intelligent

Most people view A more favorably than B

Key insights:

- Halo effect is an example of suppressed ambiguity
- System 1 generates simpler and more coherent representations than reality

Properties of System 1: What You See is All There Is

System 1 constructs a story from currently activated ideas

It cannot allow for information it does not have — information not retrieved from memory might as well not exist.

The measure of success for System 1 is the coherence of the story

The amount and quality of data are largely irrelevant.

Implication: Decorrelate errors principle

- Multiple independent judgments are better than relying on a single assessment
- Prevent witnesses from discussing before testimony
- Ask for independent written positions before group meetings

Properties of System 1: Answering an Easier Question

People usually have intuitive feelings and opinions about almost everything, and are rarely stumped.

They often have answers to questions they do not completely understand:

- We like or dislike people long before we know them
- We feel that an enterprise is bound to succeed without analyzing it

How? By answering an easier question:

- System 1 finds a related question that is easier and answers it
- System 2 can reject or modify this answer, but often endorses it without scrutiny
- We may not even notice we answered a different question
- We may not realize the target question was difficult

Happiness and Dating

Group 1 was asked:

1. How happy are you these days?
2. How many dates did you have last month?

Result: Zero correlation between responses

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Group 2 was asked the same questions in reverse order:

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2. How happy are you these days?

Result: High positive correlation

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1. How many dates did you have last month?
2. How happy are you these days?

Result: High positive correlation

Explanation: "How happy are you these days?" is a difficult question. System 1 substituted it with "What is my mood right now?"

Same results found when asking about finances

Conclusions

Two-system approach to judgment and choice:

- **System 1** (automatic and quick) generates impressions, intuitions, intentions, feelings
- **System 2** (deliberate and slow) allocates attention to effortful mental activities. It can evaluate and override the intuitive responses of System 1

System 2 is sometimes busy, and often lazy. It can endorse intuitive suggestions of System 1 without much scrutiny.

The structure is quite efficient: It minimizes effort and optimizes performance

- Most of the time the predictions of System 1 are accurate
- But it creates systematic biases in judgments and choices!