

Department of Economics

Offer holder webinar 7 April 2025

Masters in Economics programmes: Taster Session

Who we are



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ECON42515 Behavioural Economics: Taster Lecture

Andis Sofianos

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What is a bias?

- In econometrics & statistics, it is common to talk about an estimator whose expectation differs from the true value of the parameter
- That is, something is biased with respect to some baseline, or benchmark
- In behavioural and experimental economics, we typically talk about *cognitive* biases: biased decision making
- What is the baseline/benchmark for cognitive biases?
 - In some cases: some measurable truth
 - Otherwise: "rational" decision making (aka standard economic theory, homo-economicus)
 - Is this a reasonable baseline?

What is a bias?

Distinguishing bias from noise

- Bias vs. Noise:
 - A bias is systematic
 - Noise has no "direction"
- Both bias and noise can stem from faulty decision making
- Biases are worse as they can be exploited easily
- As economists we are not typically worried about noise (as long as it does not get too large...)
 - We don't expect decisions to be perfectly correct 100% of the time
 - Noise should cancel out at the aggregate level
- Biases instead worry us
 - Do not cancel out at the aggregate level
 - They suggest that our rational decision making model is wrong

Many cognitive biases

- We will now start looking at some cognitive biases that are reported in the literature
- There are A LOT of biases
 - Over 100 listed on Wikipedia!
- We will focus on some of the most prominent, or interesting ones
- We will mention many biases, but zoom in to some and study them in more detail

Some quite famous biases

- Imagine you start watching a movie and 30 minutes into it you realize you don't enjoy it.
- Do you continue watching?
- The sunk cost fallacy describes the tendency to follow through on an endeavour if we have already invested time, effort, or money into it whether or not the current costs outweigh the benefits

Some quite famous biases

- Imagine you are in a new city and are hungry
- There's two restaurants of the same cuisine, one very busy and the other almost empty
- Where do you go?

Formalize the previous example

- Two restaurants: A and B and N agents arrive in sequence. Each receives a signal, s, about which of the two is better
- Let's assume that the first agent receives signal B, only have own private signal and so follow it
- Agent 2 comes. From the first agent's choice they infer their signal was B. Now, what about their signal?
 - 1. If get private signal *B* go to *B*
 - 2. If get private signal *A* then indifferent, can randomise, say goes for *B*
- Agent 3 can infer Agent 1's signal with certainty, but not agent 2's
- Irrespective of private signal, will go for B. Public information outweighs their private signal
- Herd bias/behaviour: Tendency to follow the actions of a larger group – all signals after agent 2 are wasted
- Maybe A was better all along..

Ambiguity

Consider these two urns:



Let's follow the QR code

Typically about 2/3 of subjects prefer the risky urn regardless of the winning colour



- Let's denote by p(b) the subjective probability that individuals assign to a draw being blue
- Preferring the risky urn when winning if blue implies: p(b) < ¹/₂ for the ambiguous urn
- ▶ But then, when winning if yellow, one should bet on the ambiguous urn since: $p(y) = 1 p(b) > \frac{1}{2}$
- People are *ambiguity averse*: tendency to avoid the unknown by having a preference for known risks over unknown risks

Gambler's fallacy

- What is more likely to be a random sample of flipping a fair coin?
 - 1. HHHHTTTTH
 - 2. HTHTTHHTH
- They are in fact equally likely!
- Gambler's fallacy: belief in a negative correlation of a non-correlated random sequence.

Gambler's fallacy

Casinos & roulette

- Casinos usually will announce the last 20 numbers that have occurred on a roulette table
- Gamblers try to use this to 'inform' their bets
 - Talk about a number being "due" to come
- But there are no patterns on the roulette wheel. In each new round, all numbers are equally likely irrespective of the history of events

Gambler's fallacy

Croson & Sundali (2005)

- Use empirical data from a large casino in Reno, Nevada to test whether "experienced" gamblers succumb to the gambler's fallacy
- Advantages of using field data from a casino:
 - 1. The researcher can be sure that the roulette data is unbiased due to strong regulation
 - 2. Participants are making real decisions with their own money
 - 3. Participants represent a sophisticated and motivated sample
- Have 18 hours of roulette data during which 139 players placed 24,131 bets

Topics to be Covered

- Prospect Theory & Frame Dependence
- Cognitive Heuristics & Biases
- Social Preferences
- Cooperation
- Trust
- Anomalies in Markets
- Nudging
- Happiness Economics
- Individual Characteristics: Personality

Assessments

Formative Assessment

This will take various forms:

- Group presentation in seminar class
- Oral feedback on work prepared during seminars
- Individual research proposal pitch in seminar class

Summative Assessment

This is split in two assignments:

- 1. 750 word referee report on a journal article in the field of Behavioural Economics (40%)
- 2. 1,500 word research proposal (60%)



NATURAL RESOURCE ECONOMICS ECON44615 Dr Lucia Sbragia

Department of Economics, CE3, DUBS

Outline

- Introduction
- 3 questions
 - 1. What is going on in the fishery?
 - 2. How can we explain what is happening by using Economics?
 - 3. What can we do to create a sustainable fishery?
- Conclusions

Introduction

- Economics deals with the allocation of scare resources to different purposes.
- Natural Resource Economics deals with the allocation of scare natural resources to different purposes.

Introduction







- Natural resources classification
 - Renewable resources
 - display a significant rate of growth on a relevant economic time scale.
 - a resource with the capacity for reproduction and growth
 - Plants, animal populations, surface water, air.
 - Non-renewable resources
 - Exhibit no growth over time



 Stocks of minerals: oil, coal, natural gas and metal such as copper, tin, iron, silver and gold.



1. What is going on in the fishery Fish stock within a biologically

unsustainable level

- Fish stock
- FAO (2022).
 - **Biological sustainability:** •
 - Harvest = fish growth \rightarrow steady stock
 - Maximum sustainable yield: ٠
 - largest catch that can be taken from a species' stock without reducing the size of the population.



1. What is going on in the fishery?

- Fish capture
- FAO (2022).
- Two possible reasons:
 - Overexploitation of global fish stocks;
 - Reduced fishing effort.



NOTES: Excluding aquatic mammals, crocodiles, alligators, caimans and algae. Data expressed in live weight equivalent. SOURCE: FAO.

This trend could be underestimated !!

FIGURE 1 WORLD CAPTURE FISHERIES AND AQUACULTURE PRODUCTION

1. What is going on in the fishery?

• Fishing effort

- Anticamara et Al. (2011): Global trends in fishing effort from 1950 to 2006.
 - Total engine power and number of fishing days in a year (kilowatt days).



1. What is going on in the fishery?

- Catch per unit of effort
- Watson et Al. (2013)
 - Effort:
 - Fleets fish all of the world's oceans;
 - Intensity of fishing effort has grown 10fold for all countries on average;
 - power of fishing vessels
 - Implementation of new technology.
 - Catch:
 - 1950 mid-1980s: increased;
 - mid-1980: started to stagnate;
 - late 1980: slowly declined.
 - Catch per unit of fishing effort (CPUE) has decreased during this period.





Most likely explanation: limited

available resource.



2. How can we explain what is happening by using Economics?

- A capitalistic approach.
 - Fishery: a type of 'real' capital.
 - Real capital: any asset that is capable of producing a stream of economic benefits to society over time.
 - Natural capital vs Man-made capital: endowment from nature.
 - Investing: process of increasing the stock of real capital
 - Fishery: harvesting tomorrow vs harvesting today refraining/saving
 - Disinvesting: process of decreasing the stock of real capital
 - Fishery: harvesting today vs harvesting tomorrow

2. How can we explain what is happening by using Economics?

• Nature of the resource

	Property rights & Enforcement	Lack of property rights
	Excludable	Non-excludable
Rivalrous	Pure private goods : aquaculture C cages.	Commons: Ocean fishery
Non- rivalrous	Club goods/Congestible resources: services provided by a private beach	Pure public goods : protection that comes from the ozone layer



2. How can we explain what is happening by using Economics?

• Capitalistic approach + Rivalry + Non-excludability

→ there is no guarantee that tomorrow I will be the owner of any savings I do today

 \rightarrow no one has an incentive to preserve the resource or to invest in its improvements.

 \rightarrow everybody harvests the resource as much as possible and as soon as possible.

Tragedy of the Commons (Hardin, 1968)



How do we recover the sunken billions?

- Main causes of lost benefits:
 - Depleted fish stocks.
 - Fleet overcapacity.
 - (too many fishers chasing too little fish).
- Main goals:
 - Rebuilding fish stocks.
 - Reduction in fishing effort.

- Not a moral problem
- Sources of economic benefits from moving to the optimal sustainable state for global fisheries.
 - World Bank and FAO (2016)



- Many policies
 - On High Seas (> 200nm): (voluntary) international environmental agreements
 - On Exclusive Economic Zones (< 200nm): governments' policies
 - Command and Control policies: mandatory regulations and/or restrictions on the behaviour of fishers.
 - Incentive-based instruments: creating incentives for individuals/firms to voluntarily change their behaviour.
 - On the consumer side: change the demand pattern

Command and Control policies

- Regulations aimed at reducing fishing effort.
 - Restrictions on the boat size or other capital equipment used by fishermen, limits on days of fishing permitted per boat; moratorium; marine protected areas; marine reserves.
- Restrictions aimed at controlling the qualitative nature of the catch (juvenile fish, by-catch and catch discards, and reducing environmental damage).
 - Restrictions on fishing gear and mesh or net size.
- Regulation on the quantity
 - Total Allowable Catches (TACs): upper bounds on the harvesting of a given species during any particular season or year.

Incentive-based instruments

- Individual Transferable Quotas (ITQs)
 - Permits to harvest a particular quantity of fish based on given total allowable catches
 - Tradable
 - Without ITQ no fishing is permitted.
 - Allocation ITQs: auction; historic catches; equal sharing rules...

- On the consumer side: change the demand pattern
 - Public education campaigns can help consumers to become aware of the overexploitation of the fishery.
 - Ecolabeling can help consumers to identify products produced in a sustainable manner.
 - Certified products show a slightly higher market price. By accepting this price premium, consumers implicitly agree to pay for the fish they eat and the health of the ocean ecosystem. Consumer choices give the fishing industry a financial incentive to use sustainable methods.





2008, Earth Island Institute



1990, Earth Island Institute

Conclusions

- Current management of marine resources has proven to fall short
 - Fish stocks at sustainable levels are decreasing.
 - Economic losses are increasing.
- Many policies at hand
 - Reducing effort.
 - Creating property rights.
 - Opening new markets.
- Keep in mind
 - No single policy is perfect.
 - Fishery policies should achieve a set of multiple objectives.
 - Biological, economic, social.



References

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For more information following this session:

- Contact me via email: <u>vsevolod.ostapenko@durham.ac.uk</u>
- Check out lots of useful pre-information on the Masters Hub
- <u>Please sign up</u> for our upcoming sessions:

Masters drop in Q&A with Business School students and alumni : Thursday 17 April 2pm - 3pm (BST)

Durham Masters Webinar: Scholarships and Funding Webinar : Friday 25 April 2025, 1pm - 2pm (BST)

Speak to the MSc Economics Programme Director: Thursday 15 May 2025, 10am - 11am (BST)

Durham Masters: International Opportunities : Wednesday 28 May 2025, 12 noon - 1pm (BST)





Thank you for attending!