

Welcome to Econ Theory!

Mateus Hiro Nagata

HEC Paris

August 20, 2024

Attention Before Proceeding!



How to Use Economic Theory

Are You Rational?

Theorems

What has Economics to say about Christianity?

The Marriage Problem

Problem: want to match single man and single woman in the area!
A solution should be stable: which means it should be 1)
voluntary and 2) there is no **blocking pair**

Man-Proposing Deferred Acceptance

1. Each man creates a list that ranks all acceptable women
2. Each man proposes to the top woman on his list
3. Each woman compares the men who have proposed to her to the man she is currently holding (if any), and tentatively holds on to the one she likes most. She rejects the remaining men.
4. Each rejected man removes the rejecting woman from his list
5. If at least one man has been rejected at step 3, go to to step 2; otherwise, match each woman to the man she is currently holding

The Marriage Problem

Theorem

*In the marriage problem, a stable match always exists. In particular, the match selected by the man-proposing deferred acceptance algorithm is stable and is **man-optimal**.*

Proof

It is voluntary: for man... for woman...

There is no blocking pair. Suppose there is. Then, there is a man that would have proposed to that woman before and she would have accepted.

What Can We Learn About/From Economic Theory?

Blank

Analysis

- ▶ Do people really follow that? (Ask data)
- ▶ Useful for very limited cases: matching apps maybe. Was your case different?
- ▶ In real life how would people behave? If differently, you need to be precise about the exact way of difference
- ▶ How robust is our setup? (Dynamic, number, power, information, change of tastes, income of new people, externalities of new people, uncertainty about a person's quality, change of person's quality, does it make sense for the designer? People would believe our algorithm? Is the preference defined only by the person we end up with?...)
- ▶ Is it predictive? Prescriptive?
- ▶ Is it useful?

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Airplane Problem



Should I fly?

Definition

Rationality: “would you be ashamed if you review this decision in foresight?”

Should I fly?

- ▶ Probability of dying
- ▶ Happiness of thriving

Should I fly?

- ▶ Probability of dying
- ▶ Happiness of thriving
- ▶ How to make probabilities out of this?
- ▶ Bayesianism
- ▶ State space
- ▶ Independence
- ▶ Are all airplanes equal?

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- ▶ Representative effect

The Tyranny of Irrationality

- ▶ **Framing effect**
- ▶ **Representative effect**
- ▶ **Anchoring**
- ▶ **Mental Accounting**
- ▶ **Dynamical Inconsistency**
- ▶ **Nudges**

How to deal with it?

- ▶ Awareness
- ▶ Teamplay
- ▶ Formal Models
- ▶ Introspection

Rationality \neq apathy

What are the alternatives?

- ▶ Being rational (using economic theory)
- ▶ Relying on intuition

One Takeaway

Decision Theory: the best decision is given by assessing how much you value each outcome and how probable you believe they are

Behavioral economics: surprise! Humans are not good at Decision Theory

Game Theory: the individual optimal is not the collective optimal

General Equilibrium: free markets(and prices) makes everyone happy

Industrial economics: if you have market power, you can change the price

Market Design: clever mechanisms does save lives

One Takeaway

Macroeconomics: few things are of control of the rule makers

Econometrics: your decision may be more far-reaching than you imagine

Monetary Economics: money does not affect everyone equally

International Economics: specialization is cool

Public Sector Economics: if your decision affect others, coordinating makes sense

One Takeaway

Corporate Finance: some good deals do not happen because of distrust

Asset pricing: if the market is predictable, then it is not anymore

Economic history: black markets emerge when the market is done wrong

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Arrow's Impossibility Theorem

Pareto property: $x \succ_i y$ means $x \succ y$

Independence of Irrelevant Alternatives: social ranking between x and y depend only on x and y

Dictatorial: there is a guy that chooses all the ranking

Theorem (Arrow's Impossibility Theorem)

Suppose that the number of alternatives is at least three and that all preference profiles are admissible. Then, every social welfare function which satisfies the Pareto property and Independence of Irrelevant Alternatives is dictatorial.

Gibbard-Satterthwaite Theorem

2 or more people choosing between 3 or more alternatives. Then, being honest is always the best only if it is a dictatorial election.

Covered Interest-Rate Parity

Capital mobility and perfect substitutability of domestic and foreign assets \Rightarrow No difference investing in domestic or foreign interest rates

No Trade Theorem

- ▶ Suppose an equilibrium. When private information comes I want to sell. The other guy knows I have a reason to sell. He is convinced he should not buy.

Can we beat the market?

- ▶ On the Impossibility of Informationally Efficient Markets - Sanford J. Grossman and Joseph E. Stiglitz: costly arbitrage points to existence of gains
- ▶ Chaos, overfitting and equilibrium: To what extent can machine learning beat the financial market? - Peng Yaohao, João Gabriel Moraes de Souza: EMH and Bias-Variance Tradeoff
- ▶ Bounded arbitrage and nearly rational behavior - Leandro de Nascimento: principle of almost absence of arbitrage opportunities \Leftrightarrow nearly rational decision-making
- ▶ Exponentially Damped Lévy Flights, Multiscaling, and Exchange Rates - Raul Matsushita, et al.: tradeoff risk-return... but heavy-tails mean that extreme events are much more likely to happen (black monday)

Limits of Economic Theory

- ▶ Prices vs Quantities under Severe Uncertainty - Brian Hill:
limiting carbon by tax was considered better than by permits.
It turns out to be wrong.

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Relations

- ▶ Depois os mensageiros voltaram a Jacó, dizendo: Fomos ter com teu irmão Esaú; e, em verdade, vem ele para encontrar-te, e quatrocentos homens com ele. Jacó teve muito medo e ficou aflito; dividiu em dois bandos o povo que estava com ele, bem como os rebanhos, os bois e os camelos; pois dizia: Se Esaú vier a um bando e o ferir, o outro bando escapará. - Gênesis 32:6-8.
- ▶ “In heaven, there is no Economics”
- ▶ Gilboa's: Jacob meeting brother
- ▶ Bayesianism
- ▶ Pascal's Wager:
- ▶ Late emergence of probability
- ▶ Divine Games:

My Opinion

Economics is a very frail human(e) attempt of analyzing reasonable human action. Faith starts when we overcome all of the reasonable.

Ora, a fé é a certeza daquilo que esperamos e a prova das coisas que não vemos. - Hebreus 11:1

Porquanto a sabedoria deste mundo é loucura aos olhos de Deus. Pois está escrito: “Ele apanha os sábios nas próprias artimanhas deles”. - 1 Coríntios 3:19

e conhecer o amor de Cristo, que excede todo o entendimento, para que sejais cheios até a inteira plenitude de Deus. - Efésios 3:19

Amai os vossos inimigos e orais pelo que vos persueguem - Mateus 6:44

Então disse Jesus aos seus discípulos: Se alguém quiser vir após mim, renuncie-se a si mesmo, tome sobre si a sua cruz, e siga-me; Porque aquele que quiser salvar a sua vida, perdê-la-á, e quem perder a sua vida por amor de mim, achá-la-á. Pois que aproveita ao homem ganhar o mundo inteiro, se perder a sua alma? Ou que dará o homem em recompensa da sua alma? Porque o Filho do homem virá na glória de seu Pai, com os seus anjos; e então dará a cada um segundo as suas obras. - Lucas 9:23

Sobre tudo o que se deve guardar, guarda o teu coração, porque dele procedem as fontes da vida - Provérbios 4:23

Conclusion

- ▶ (Economic) reality is complex and the only thing we have are fully controlled models or messy data
- ▶ Be aware of how human you are
- ▶ Theorems can change the world but read the prescription clearly
- ▶ Be analytical, reasonable and responsible but be faithful

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