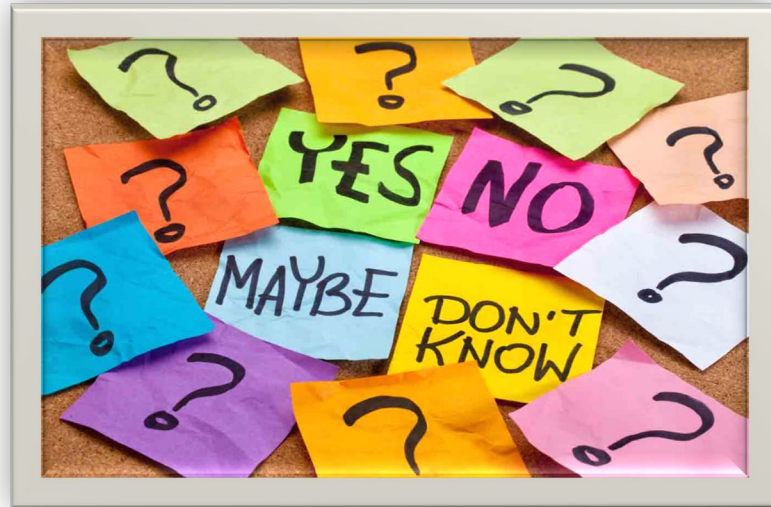


# Gamification

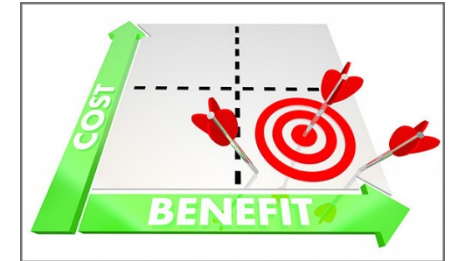
*Strategic Thinking in Classrooms*

- A vast part of economics studies situations involving **individual decisions**
  - pricing decisions
  - consumption decisions
  - investment decisions
  - marketing decisions
  - information decisions
  - intervention decisions
  - ....
  
- How are such decisions made? Consequences?



# Decisions: CBA Framework

- A large part of economic theory builds on the foundation that these decisions are not made randomly but outcomes of a **rational Cost-Benefit-Analysis**



- For **education** this suggests that students
  - need to learn how to soundly apply the **CBA** adopted to specific decision situations («Learning-by-Doing»)
  - need to be able to identify deviations of the principle in order to understand/develop new (behavioral) theories

The core idea of **Gamification** in the **economics context** is to **flexibly** and **efficiently** bring such **decision situations** in a **playful** and **digital** way to the **classroom**:



- «**Playful**»: rather than studying economic decisions theoretically, students are **directly involved** into them, possibly facing a competition (→ emotions!)
- «**Digital**»: Students can access «The Game» via Laptop/Tablet, and get **immediate feedback** on the consequences of their choices.
- «**Flexibly**»: Gamification tool (otree) is such that it allows to set up a situation that **fits the various needs** of economic/finance classes studying decisions.
- «**Efficiently**»: Standard situations will be prepared such that they can be **swiftly implemented** by a lecturer without deep knowledge of the «code».

# Current Status

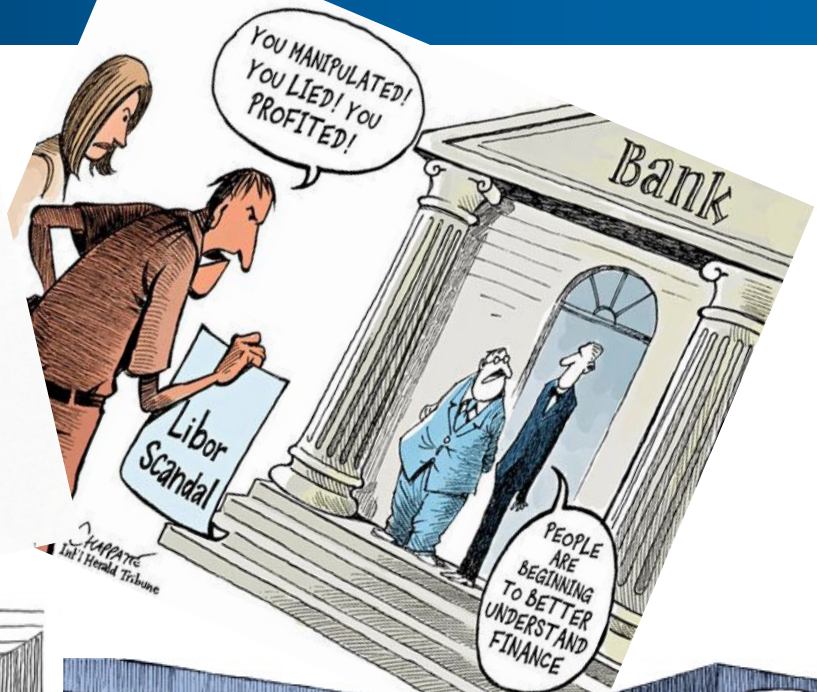
- The project is in its **development phase** (finished by end of 2021), but certain applications are ready.
- We (=VWL team) intend to use the tool in different courses, such as
  - Microeconomics (EN, DE (BA))
  - Competition Policy (BA)
  - MAS BA (Economics)
  - Environmental Economics (Auctions)
- **Today:** First Demo of the tool in a set of simple applications
  - Idea: Interested Lecturers can input their ideas/needs for specific games in their courses.



1) «Let's Play!»: The Front-End of the Gamification tool in action

2) «Let's Customize!»: The Back-End of the tool (overview)

# Non-Cooperative Games





# Prisoner's Dilemma

## Finding Nash

### Bonnie and Clyde

- Two American criminals during the economic crisis at the beginning of the 20<sup>th</sup> century
- Responsible for about 13 murders, numerous bank and shop robberies
- **Confess:** Provide all information about your and your partner in crime's activity
- **Silence:** Keep all information about your and your partner in crime's activity



# Let's Play

Bonnie and Clyde

One Shot

<https://zhaw-fwp-test.herokuapp.com/room/Gamification1/>



# Let's Play

Bonnie and Clyde

## Repeated Game

<https://zhaw-fwp-test.herokuapp.com/room/Gamification2/>



# Let's Play

Bonnie and Clyde

## Repeated Game with Communication

<https://zhaw-fwp-test.herokuapp.com/room/Gamification3/>





## Normal Form Games (Non-Cooperative)

- **2x2, 3x3, 2x3**
- **Payoffs decide Games (e.g. Matching Pennies, Battle of Sexes, Ultimatum Game)**
- **Random Payment**
- **Number of Players**
- **etc.**

## Auctions

- Dutch (Descending) versus English (Ascending)
- Second Price (sealed) Bid

## Competition

- Oligopoly (e.g. **Cournot**, Bertrand)
- Perfect Competition

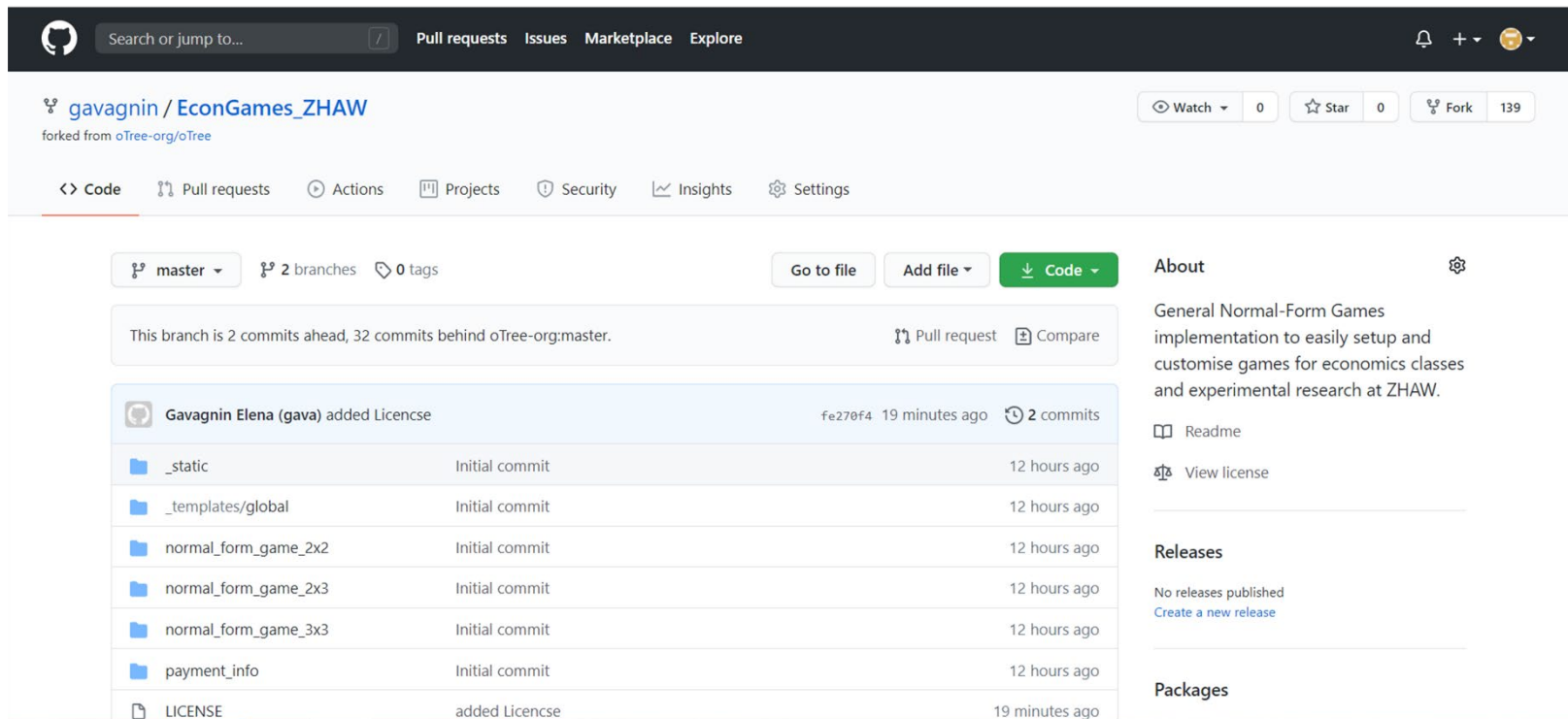
# Let's Experiment

Using Gamification

# oTree – Customized Code

## oTree Repository in GitHub

[https://github.com/gavagnin/EconGames\\_ZHAW](https://github.com/gavagnin/EconGames_ZHAW)



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gavagnin / EconGames\_ZHAW  
forked from oTree-org/oTree

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master 2 branches 0 tags

This branch is 2 commits ahead, 32 commits behind oTree-org:master. Pull request Compare

Gavagnin Elena (gava) added Licence fe270f4 19 minutes ago 2 commits

_static	Initial commit	12 hours ago
_templates/global	Initial commit	12 hours ago
normal_form_game_2x2	Initial commit	12 hours ago
normal_form_game_2x3	Initial commit	12 hours ago
normal_form_game_3x3	Initial commit	12 hours ago
payment_info	Initial commit	12 hours ago
LICENSE	added Licence	19 minutes ago

About  
General Normal-Form Games implementation to easily setup and customise games for economics classes and experimental research at ZHAW.  
Readme  
View license

Releases  
No releases published  
Create a new release

Packages



## oTree General Information

<https://www.otree.org/>

### Technical Details

Programming Language: Python

User Interface: HTML5, Bootstrap framework

Server-Side: Django web application framework

License: MIT Open Source License

oTree Manual: <https://otree.readthedocs.io/en/latest/index.html#>

oTree Glossary for z-Tree Programmers: From Z-Tree to oTree

<http://otree.readthedocs.io/en/latest/misc/ztree.html>

# oTree – Developer Information

## Installation for Developer:

Python, oTree

<http://otree.readthedocs.io/en/latest/install-windows.html#install-windows>

Server-Installation: Heroku (Cloud) or Docker (PC).

Client-Installation: Browser, each participant gets an individual link from the experimenter.

# Conclusion

- **Gamification** brings a vast array of economic decisions to the (digital) classroom
  - Some **upshots**:
    - can be **implemented at any level** (BA, MA, MAS, Executive Education,...)
    - can be adopted to **particular needs**
    - easy to implement (browser-based), independent of physical presence in the same room, much quicker/sexier than paper-and-pen
    - makes fun / can **trigger emotions**
  - The project is in its **development phase** («**Customizability**»)
- If interested in particular applications, contact the project head ([heft@zhaw.ch](mailto:heft@zhaw.ch))

