

# Fairness & Social Preferences

CMPUT 654: Modelling Human Strategic Behaviour

Kahneman, Knetsch, and Thaler (1986)

Gal, Mash, Procaccia, and Zick (2017)

# Logistics

## 1. Assignment #3 released

- Summaries of your 6 favourite papers
- At least one paper from each week

## 2. MSc supervision

- **March 15** deadline for setting up summer RA support
- I don't actually know how drop-dead this is, but
- Prospective MSc students, let's talk this week :)

# Lecture Outline

1. Logistics
2. Kahneman, Knetsch, and Thaler (1986)
3. Gal, Mash, Procaccia, and Zick (2017)

# Kahneman, Knetsch, and Thaler (1986)

## Why:

- Widely-applicable, robust model of fairness
- Connects to well-known **economic** anomalies

## Two main parts:

1. Experimental survey of **descriptive** fairness attitudes
2. Implications of the model

# Reference Transactions

Fairness is evaluated in terms of **changes** relative to some **reference transaction** (the status quo, the usual transaction)

Question 2A. A small photocopying shop has one employee who has worked in the shop for six months and earns \$9 per hour. Business continues to be satisfactory, but a factory in the area has closed and unemployment has increased. Other small shops have now hired reliable workers at \$7 an hour to perform jobs similar to those done by the photocopy shop employee. The owner of the photocopying shop reduces the employee's wage to \$7.

(*N* = 98) Acceptable 17% Unfair 83%

Question 1. A hardware store has been selling snow shovels for \$15. The morning after a large snowstorm, the store raises the price to \$20. Please rate this action as:

Completely Fair    Acceptable  
Unfair    Very Unfair

Question 2B. A small photocopying shop has one employee...[as in Question 2A]...The current employee leaves, and the owner decides to pay a replacement \$7 an hour.

(*N* = 125) Acceptable 73% Unfair 27%

# Framing Effects: Gains vs. Losses

Because they are about **changes** rather than end **outcomes**, judgements about fairness are prone to **framing effects**.

Question 4A. A company is making a small profit. It is located in a community experiencing a recession with substantial unemployment but no inflation. There are many workers anxious to work at the company. The company decides to decrease wages and salaries 7% this year.

(*N* = 125) Acceptable 38% Unfair 62%

Question 6A. A small company employs several people. The workers' incomes have been about average for the community. In recent months, business for the company has not increased as it had before. The owners reduce the workers' wages by 10 percent for the next year.

(*N* = 100) Acceptable 39% Unfair 61%

Question 4B. ...with substantial unemployment and inflation of 12%...The company decides to increase salaries only 5% this year.

(*N* = 129) Acceptable 78% Unfair 22%

Question 6B. A small company employs several people. The workers have been receiving a 10 percent annual bonus each year and their total incomes have been about average for the community. In recent months, business for the company has not increased as it had before. The owners eliminate the workers' bonus for the year.

(*N* = 98) Acceptable 80% Unfair 20%

# Precipitating Events

It is okay to increase prices to protect **reference profit**, but not to exploit **market power**

Question 7. Suppose that, due to a transportation mixup, there is a local shortage of lettuce and the wholesale price has increased. A local grocer has bought the usual quantity of lettuce at a price that is 30 cents per head higher than normal. The grocer raises the price of lettuce to customers by 30 cents per head.

( $N = 101$ ) Acceptable 79% Unfair 21%

Question 12. A severe shortage of Red Delicious apples has developed in a community and none of the grocery stores or produce markets have any of this type of apple on their shelves. Other varieties of apples are plentiful in all of the stores. One grocer receives a single shipment of Red Delicious apples at the regular wholesale cost and raises the retail price of these Red Delicious apples by 25% over the regular price.

( $N = 102$ ) Acceptable 37% Unfair 63%

Question 14. A landlord rents out a small house. When the lease is due for renewal, the landlord learns that the tenant has taken a job very close to the house and is therefore unlikely to move. The landlord raises the rent \$40 per month more than he was planning to do.

( $N = 157$ ) Acceptable 9% Unfair 91%

# Normal, not Just

The reference transaction is the **usual transaction**

- Fairness in this view has nothing to do with **justice**
- Initially-unfair transactions can "become fair"
- People's **expectations** and fairness judgements coincide



# Implications: Demand Changes

**PROPOSITION 1:** *When excess demand in a customer market is unaccompanied by increases in suppliers' costs, the market will fail to clear in the short run.*

**PROPOSITION 3:** *Price changes will be more responsive to variations of costs than to variations of demand, and more responsive to cost increases than to cost decreases.*

# Implications: Pricing

**PROPOSITION 2:** *When a single supplier provides a family of goods for which there is differential demand without corresponding variation of input costs, shortages of the most valued items will occur.*

**PROPOSITION 4:** *Price decreases will often take the form of discounts rather than reductions in the list or posted price.*

# Gal, Mash, Procaccia, and Zick (2017)

## Why:

- Theoretical, field, and experimental approaches all at once
- Example of a very **algorithmic game theory** approach

One part per approach:

1. *Algorithmic*: Efficient computation of optimal envy-free allocations
2. *Theory*: Maximin optimization implies equitability
3. *Field data*: Optimization target makes a practical difference
4. *Experimental*: People actually care about the difference

# Definitions

- A solution (allocation plus prices) is **envy-free** if every agent's utility for their assigned room at its price is at least as high as getting any other room at the other room's price.
- A **maximin solution** is one that maximizes the utility of the worst-off agent (subject to envy-freeness)
- An **equitable solution** is one that minimizes **disparity** (the difference in utilities between the best-off and worst-off agents)

# Theory

## **First Welfare Theorem:**

If  $(A,p)$  is a Walrasian equilibrium, then  $A$  is a welfare-maximizing allocation.

## **Second Welfare Theorem:**

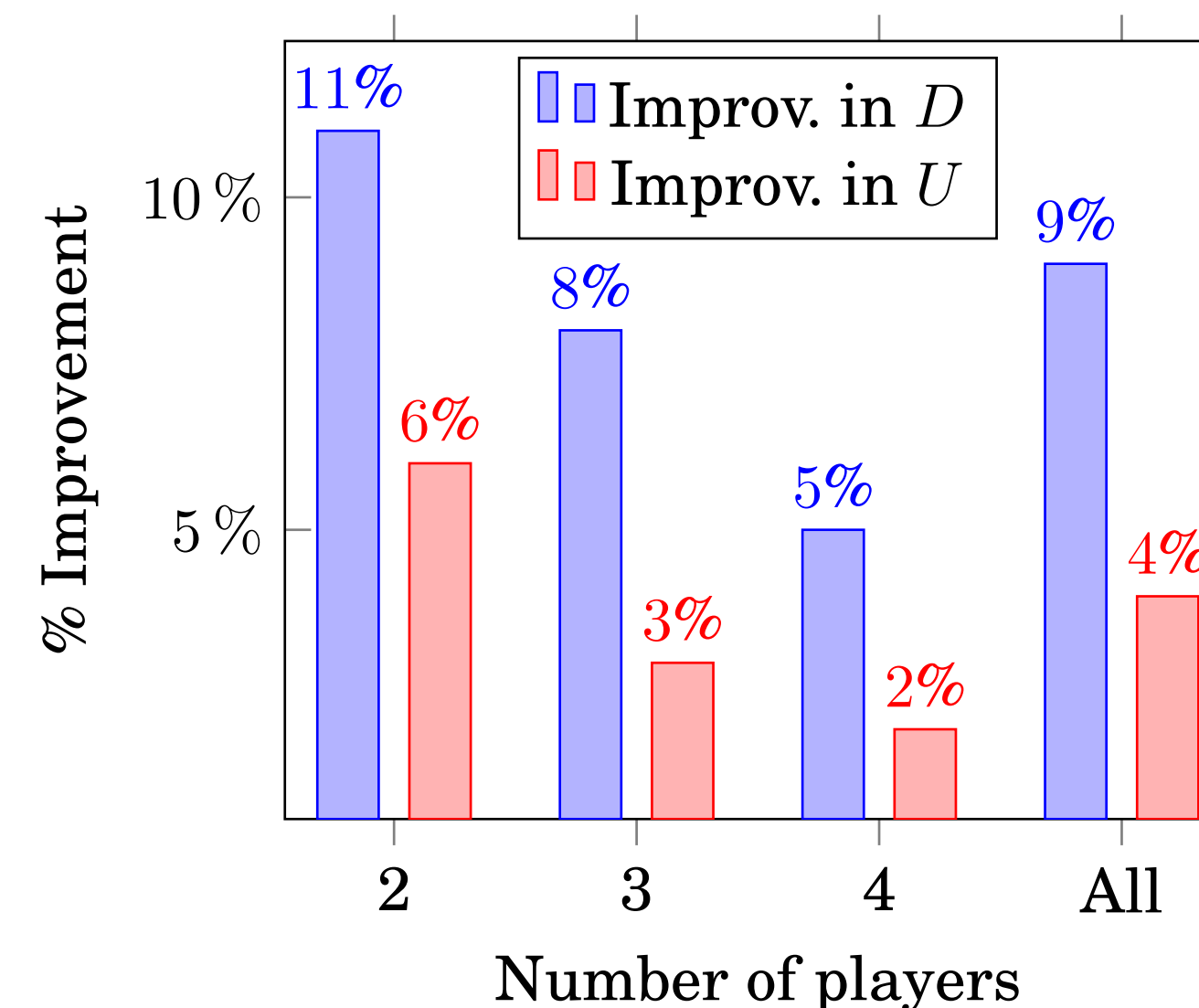
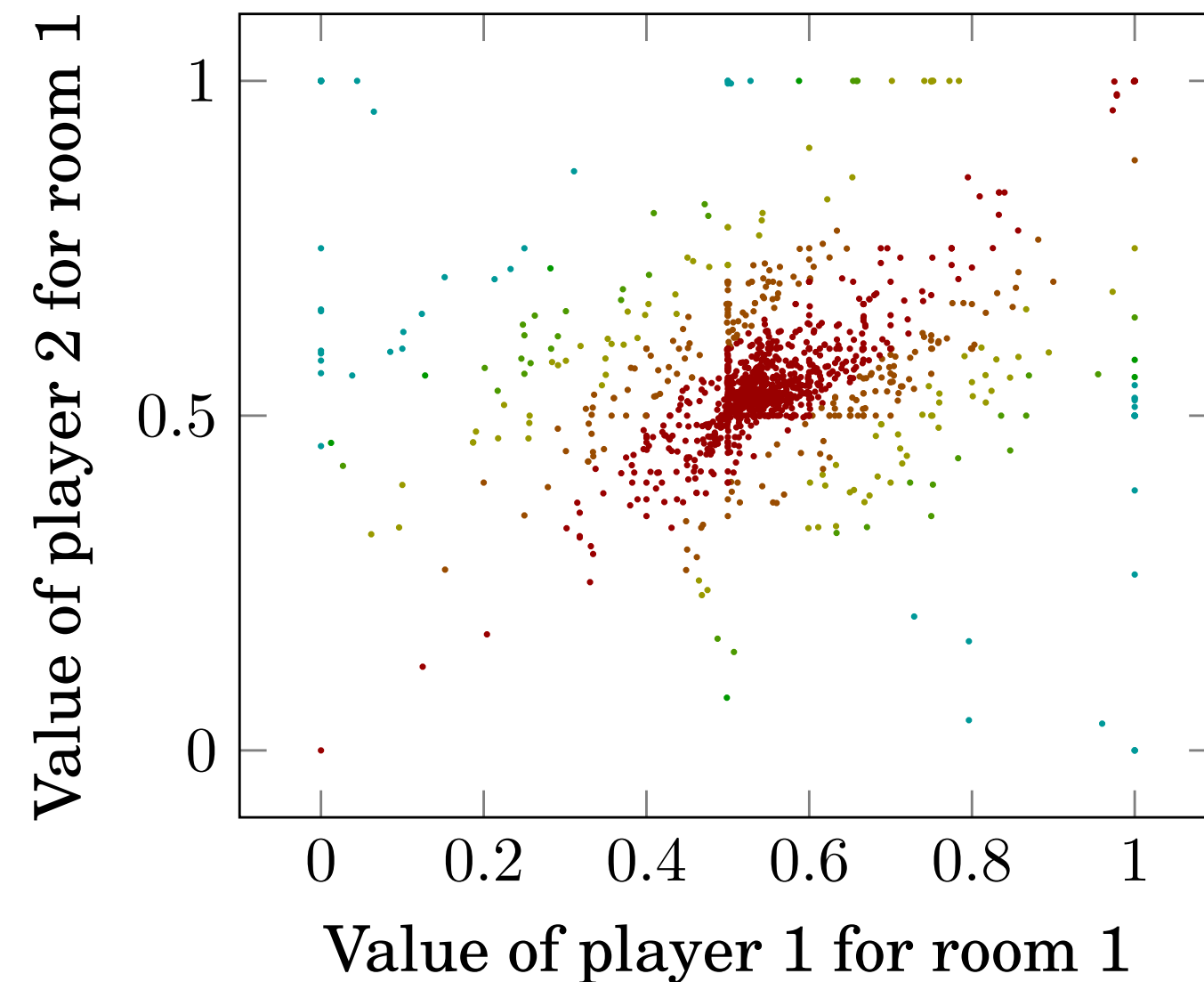
If  $(A,p)$  is a Walrasian equilibrium and  $A'$  is a welfare-maximizing allocation, then  $(A',p)$  is also a Walrasian equilibrium.

## **Theorem:**

If  $p^*$  is a maximin vector of prices, then it is also equitable.

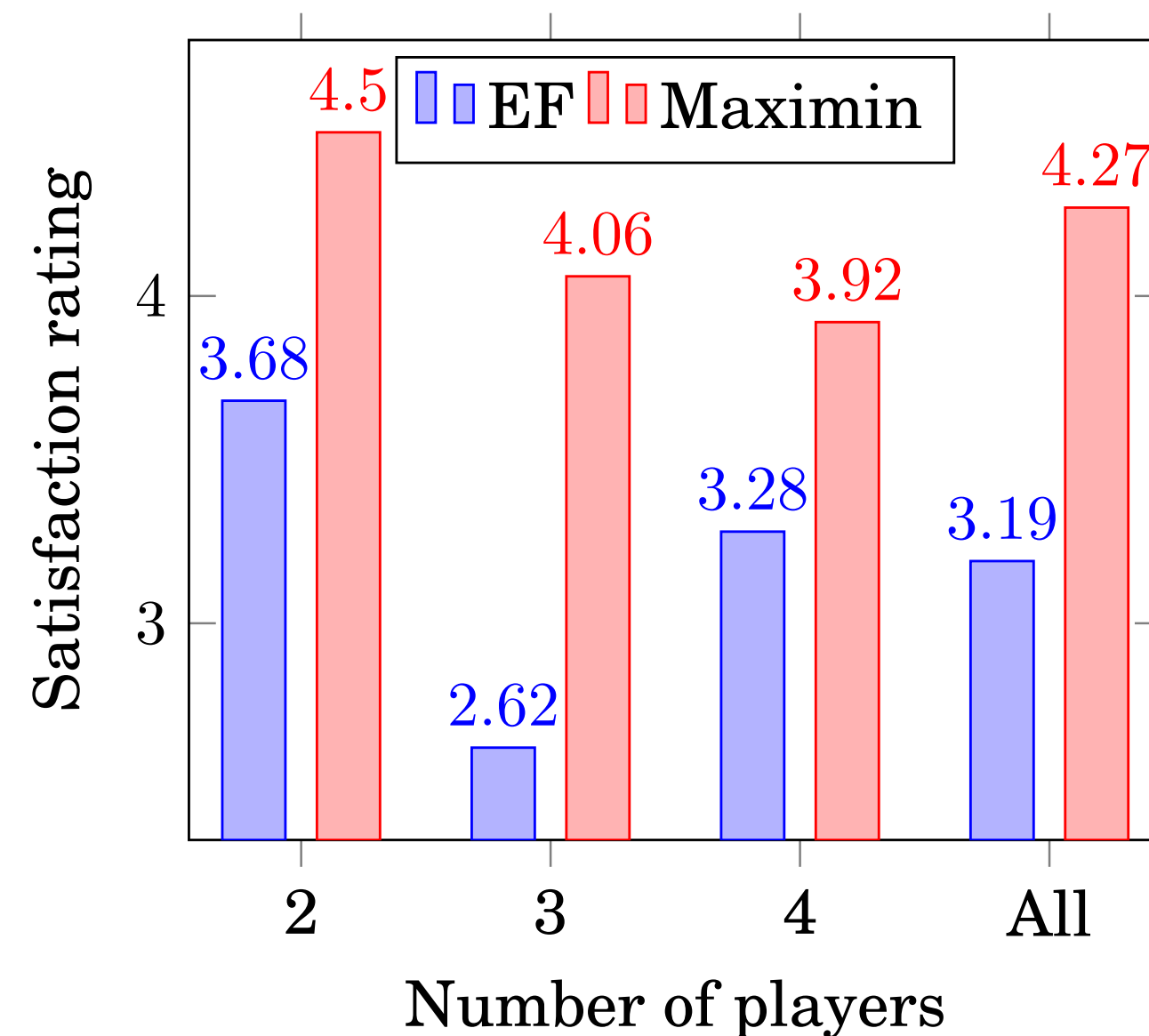
# Field Data

- **Spliddit:** A website that people can use to divide rent among roommates
- Computed maximin solution and evaluated improvement in disparity and in min-utility for 1,358 (out of 13,277) instances

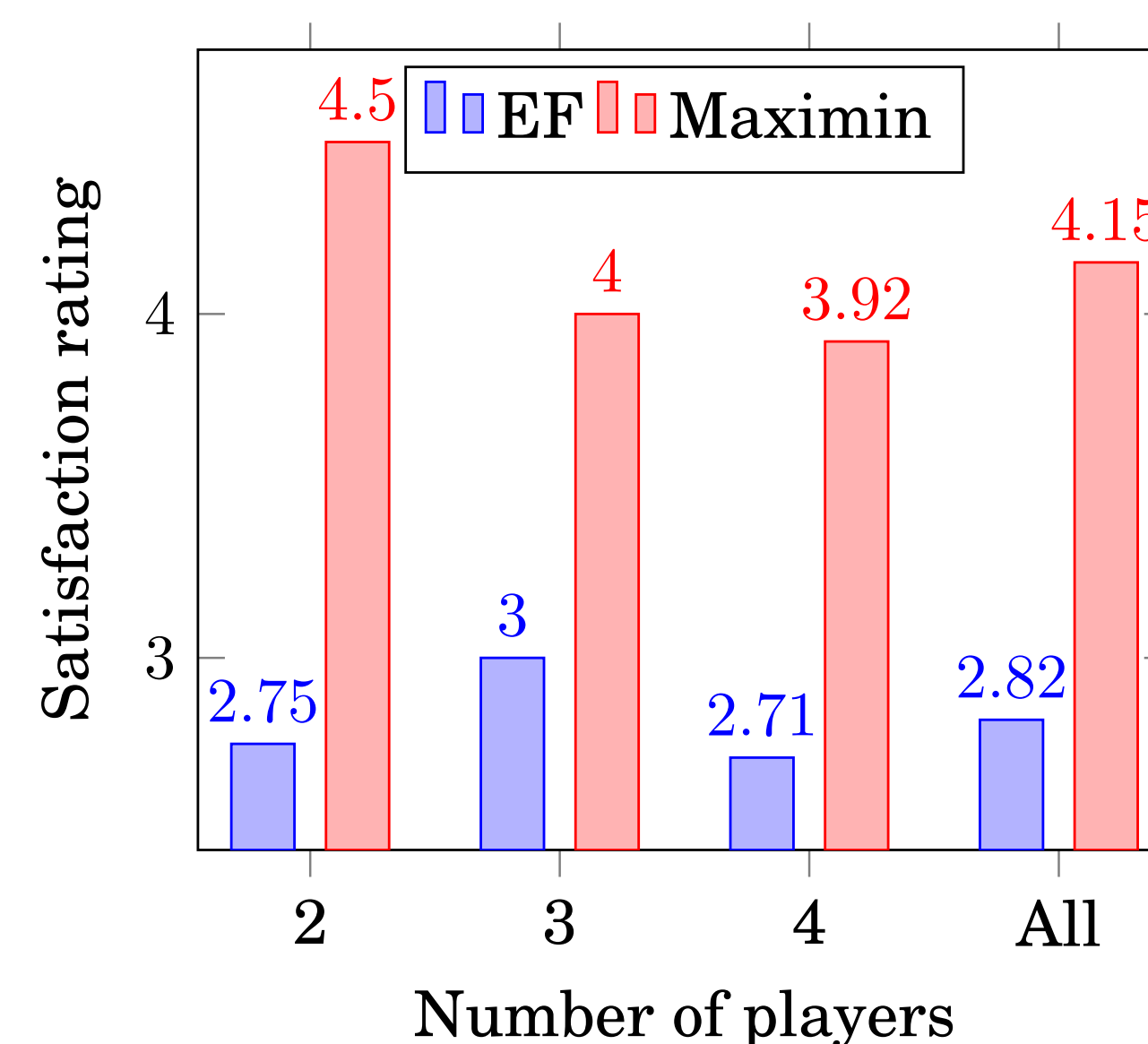


# Experimental

- Presented users with 2 solutions to their **own instances**: maximin and arbitrary envy-free.
- Asked them to rate **own allocation** and **others' allocation**



(a) Individual.



(b) Others.