Competing for Its Own Sake:
Experimental Evidence on the Welfare Effects of Competition

Jiarui Wang

Boston University

Motivation

Intense Competition in China's Education System

Motivation

"1 point increase in grades, 1 stadium of competitors beaten"

Motivation

Do they enjoy studying in such a highly competitive environment?

Motivation

Does this competition experience have second-order consequences?

Motivation

Does this competition experience have second-order consequences? Interest in learning

Motivation

Does this competition experience have second-order consequences? Social attitudes

Research Questions

1. How does competition directly affect utility?
   - → Question I: Competition $\overset{?}{\Longrightarrow}$ Utility
   - → Question II: Why?

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   - → Question I: Competition $\overset{?}{\Longrightarrow}$ Utility
   - → Question II: Why?

2. Are there second-order consequences of these utility effects?
   - → Question I: Competition $\overset{?}{\Longrightarrow}$ Preference for the task
   - → Question II: Competition $\overset{?}{\Longrightarrow}$ Zero-sum thinking and Prosocial behavior

Preview of Findings

1. Does competition directly affect utility, independent of competition outcomes?
   - → Result 1: Competition ↑ $\Longrightarrow$ Utility ↑
   - → Result II: Belief channel and Preference channel

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2. Are there second-order consequences of these utility effects?
   - → Result I: Competition ↑ $\Longrightarrow$ Preference for the task ↑
   - → Result II: Competition ↑ $\Longrightarrow$ Zero-sum thinking ↓ Prosocial behavior ↑

Related Literature

- Behavioral welfare economics

  Kahneman et al., 1997, 1999; Frey et al., 2004; Frey and Stutzer, 2005; Kahneman and Krueger, 2006; Benz and Frey, 2008; Benjamin et al., 2014; Bartling et al., 2014; Bernheim et al., 2024

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  → Contribution: New evidence on utility effects of competition

- State-dependent preferences - attribution bias

  Haggag et al., 2019, 2021; Bushong and Gagnon-Bartsch, 2023

  → *Attribution bias: the tendency to misattribute the influence of a temporary state to a stable property of the good or activity.*

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- Experimental studies on competition

  Gneezy et al., 2003; Niederle and Vesterlund, 2007, 2011; Carpenter et al., 2010; Cason et al., 2010; Mobius et al., 2022; Hauge et al., 2023; Englmaier et al., 2024; Hong et al.,2015;

  → Contribution: New design for the control group - threshold score

Roadmap

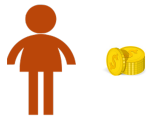
- Introduction
- Theoretical Framework
- Experimental Design
- Experimental Results
- Conclusion

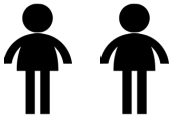
Theoretical Framework

Definition of Competition

- A situation where:
  - → A scarce resource is allocated among parties
  - → Payoffs depend on both one's own and others' performance

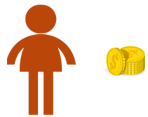
Definition of Competition

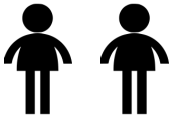




Competition

Utility Function in Competition





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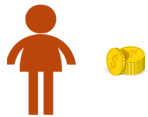
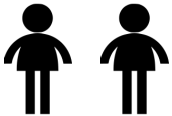


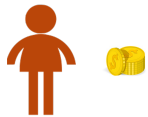


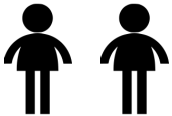
Competition

- Monetary utility

$$\rightarrow \; p^{\text{win}}(e^{\text{C}}) \cdot r^{\text{win}} + \left(1 - p^{\text{win}}(e^{\text{C}})\right) \cdot r^{\text{lose}}$$

Utility Function in Competition





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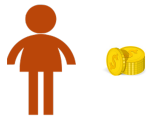
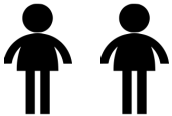
- Non-monetary utility

  $\rightarrow$ ψ^{C}

Utility Function in Competition





Competition

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  - $\rightarrow p^{\text{win}}(e^{\text{C}}) \cdot r^{\text{win}} + \left(1 - p^{\text{win}}(e^{\text{C}})\right) \cdot r^{\text{lose}}$
- Non-monetary utility
  - $\rightarrow \psi^{C}$
- Cost of effort
  - $\rightarrow c(e^{\text{C}})$

Utility Function in Competition

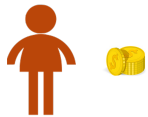
$$U^C = \underbrace{EU^C}_{\text{monetary utility}} + \underbrace{\psi^C}_{\text{non-monetary utility}} - c(e^C)$$

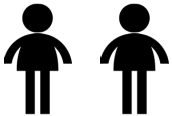
- Monetary utility
  - → $EU^{\mathrm{C}} = p(e^{\mathrm{C}}) \cdot r^{\mathrm{win}} + \big(1 - p(e^{\mathrm{C}})\big) \cdot r^{\mathrm{lose}}$
- Non-monetary utility
  - → Immediate affective responses to competing, such as excitement or stress
  - → Anticipatory utility from envisioning winning or losing the competition

Definition of Non-Competition in Literature

- A piece-rate payment scheme:
  - → Payoffs depend on how many pieces produced
  - → No uncertainty

Utility Function in Competition





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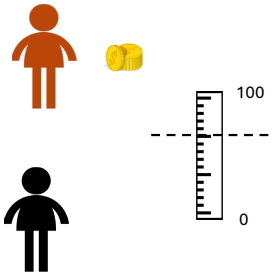
Definition of Non-Competition in Literature

- A piece-rate payment scheme:
  - → Payoffs depend on how many pieces produced
  - → No uncertainty
  - → **Problem: confounds such as risk aversion**

Definition of Non-Competition

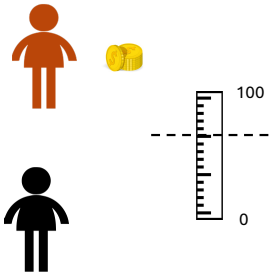
- A situation where:
  - → A goal is pursued independently by individuals
  - → Payoffs depend on whether one's performance meets a pre-determined threshold

Definition of Non-Competition



Non-competition

Utility Function in Non-Competition



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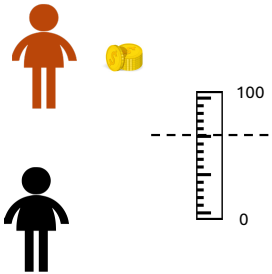
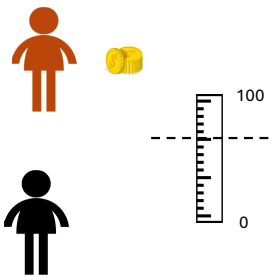


Non-competition

- Monetary utility

$$\rightarrow \; p^{\text{pass}}(e^{\text{NC}}) \cdot r^{\text{pass}} + \left(1 - p^{\text{pass}}(e^{\text{NC}})\right) \cdot r^{\text{fail}}$$

Utility Function in Non-Competition



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  → ψ^{NC}

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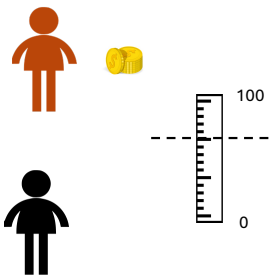

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- Cost of effort
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Utility Function in Non-Competition

$$U^{NC} = \underbrace{EU^{NC}}_{\text{monetary utility}} + \underbrace{\psi^{NC}}_{\text{non-monetary utility}} - c(e^{NC})$$

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Utility: Competition vs. Non-competition

$$U^{C} = \underbrace{p(e^{\mathrm{C}}) \cdot r^{\mathrm{win}} + \big(1 - p(e^{\mathrm{C}})\big) \cdot r^{\mathrm{lose}}}_{\text{monetary utility}} + \underbrace{\psi^{\mathrm{C}}}_{\text{non-monetary utility}} - \underbrace{c(e^{\mathrm{C}})}_{\text{cost of effort}}$$

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Model Insights for Design: Rewards

$$U^C = \underbrace{p(e^{\mathrm{C}}) \cdot \mathbf{r^{win}} + \left(1 - p(e^{\mathrm{C}})\right) \cdot \mathbf{r^{lose}}}_{\text{monetary utility}} + \underbrace{\psi^{\mathrm{C}}}_{\text{non-monetary utility}} - \underbrace{c(e^{\mathrm{C}})}_{\text{cost of effort}}$$

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Model Insights for Design: Rewards

$$U^C = \underbrace{p(e^{\mathrm{C}}) \cdot \textbf{\$1m} + \left(1 - p(e^{\mathrm{C}})\right) \cdot \textbf{\$0}}_{\text{monetary utility}} + \underbrace{\psi^{\mathrm{C}}}_{\text{non-monetary utility}} - \underbrace{c(e^{\mathrm{C}})}_{\text{cost of effort}}$$

$$U^{NC} = \underbrace{p(e^{\mathrm{NC}}) \cdot \textbf{\$0.1} + \left(1 - p(e^{\mathrm{NC}})\right) \cdot \textbf{\$0}}_{\text{monetary utility}} + \underbrace{\psi^{\mathrm{NC}}}_{\text{non-monetary utility}} - \underbrace{c(e^{\mathrm{NC}})}_{\text{cost of effort}}$$

Model Insights for Design: Equalize Rewards

$$U^C = \underbrace{p(e^{\mathrm{C}}) \cdot r^{\mathrm{win}} + \left(1 - p(e^{\mathrm{C}})\right) \cdot r^{\mathrm{lose}}}_{\text{monetary utility}} + \underbrace{\psi^{\mathrm{C}}}_{\text{non-monetary utility}} - \underbrace{c(e^{\mathrm{C}})}_{\text{cost of effort}}$$

$$U^{NC} = \underbrace{p(e^{\mathrm{NC}}) \cdot r^{\mathrm{pass}} + \left(1 - p(e^{\mathrm{NC}})\right) \cdot r^{\mathrm{fail}}}_{\text{monetary utility}} + \underbrace{\psi^{\mathrm{NC}}}_{\text{non-monetary utility}} - \underbrace{c(e^{\mathrm{NC}})}_{\text{cost of effort}}$$

- Equalize rewards to avoid reward-size confounds ($r^{\mathrm{win}} = r^{\mathrm{pass}}, r^{\mathrm{lose}} = r^{\mathrm{fail}}$)

Model Insights for Design: Gain-Framed Rewards

$$U^{C} = \underbrace{p(e^{\mathrm{C}}) \cdot \mathbf{R} + \big(1 - p(e^{\mathrm{C}})\big) \cdot \mathbf{0}}_{\text{monetary utility}} + \underbrace{\psi^{\mathrm{C}}}_{\text{non-monetary utility}} - \underbrace{c(e^{\mathrm{C}})}_{\text{cost of effort}}$$

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Model Insights for Design: Loss-Framed Rewards

$$U^C = \underbrace{p(e^{\mathrm{C}}) \cdot \mathbf{0} + \big(1 - p(e^{\mathrm{C}})\big) \cdot (\mathbf{-R})}_{\text{monetary utility}} + \underbrace{\psi^{\mathrm{C}}}_{\text{non-monetary utility}} - \underbrace{c(e^{\mathrm{C}})}_{\text{cost of effort}}$$

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Utility: Competition vs. Non-competition

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Model Insights for Design

$$U^C = \underbrace{\mathbf{p^C} \cdot r^{\text{win}} + (1 - \mathbf{p^C}) \cdot r^{\text{lose}}}_{\text{monetary utility}} + \underbrace{\psi^{\text{C}}}_{\text{non-monetary utility}} - \underbrace{c(e^{\text{C}})}_{\text{cost of effort}}$$

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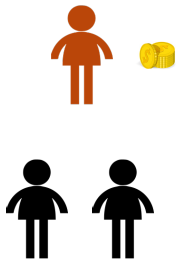
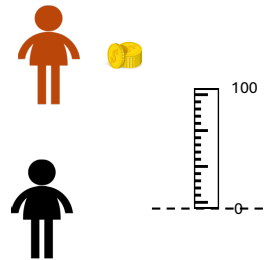
- Perceived probability
  - → Ex-ante probability (pre-determined by design)
  - → Subjective probability (deviations from the ex-ante probability)

Competition vs. Non-Competition: Ex-Ante Probability



Competition: Prob (win) = 0.5



Non-competition: Prob (pass) = 1

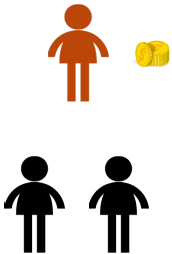
Model Insights for Design: Equalize Ex-Ante Probability

$$U^C = \underbrace{\mathbf{p^C} \cdot r^{\text{win}} + (1 - \mathbf{p^C}) \cdot r^{\text{lose}}}_{\textit{monetary utility}} + \underbrace{\psi^{\text{C}}}_{\textit{non-monetary utility}} - \underbrace{c(e^{\text{C}})}_{\textit{cost of effort}}$$

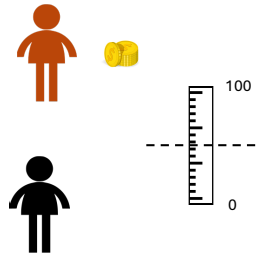
$$U^{NC} = \underbrace{\mathbf{p^{NC}} \cdot r^{\text{pass}} + (1 - \mathbf{p^{NC}}) \cdot r^{\text{fail}}}_{\textit{monetary utility}} + \underbrace{\psi^{\text{NC}}}_{\textit{non-monetary utility}} - \underbrace{c(e^{\text{NC}})}_{\textit{cost of effort}}$$

- Equalize ex-ante probabilities to avoid winning-probability confounds

Competition vs. Non-Competition: Ex-Ante Probability

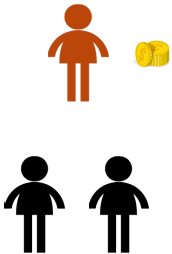


Competition: Prob (win) = 0.5



Non-competition: Threshold = ?

Competition vs. Non-Competition: Ex-Ante Probability



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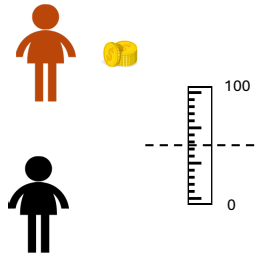


Non-competition: Threshold = Median

Model Insights for Design: Summary

- Rewards:
  - → Equalize rewards across treatments to avoid reward-size confounds
  - → Gain-Framed Rewards vs Loss-Framed Rewards
- Ex-ante probabilities:
  - → Equalize ex-ante probabilities to avoid winning-probability confounds

Experimental Design

Treatments: Competition vs. Non-Competition

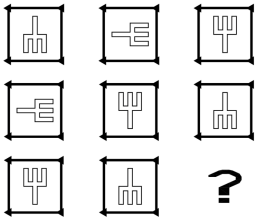
Treatment 1

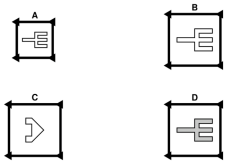
Competition

Treatment 2

Non-Competition

Experimental Task: IQ Quiz



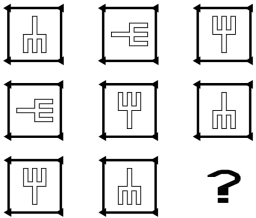


Which piece is the correct complement?

- ○ A
- ○ B
- ○ C
- ○ D

Next

Experimental Task: IQ Quiz



- 4-minute timed quiz
- 50 Raven's Matrices questions
- Questions vary in difficulty
- Score rule: $+1$ correct, -0.25 incorrect

Treatments: Competition vs. Non-Competition

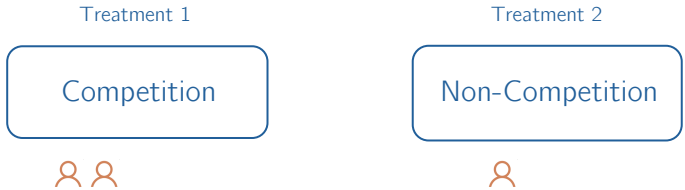
Treatment 1

Competition

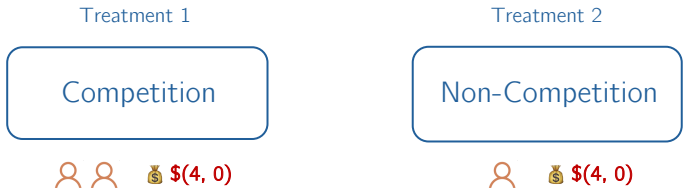
Treatment 2

Non-Competition

Treatments: Competition vs. Non-Competition



Treatments: Competition vs. Non-Competition



Rewards: Gain-Framed vs Loss-Framed

Treatment 1

Competition

$(4, 0)

Treatment 2

Non-Competition

$(4, 0)

Treatment 3

Competition

$(0, -4)

Treatment 4

Non-Competition

$(0, -4)

Treatments: Competition vs. Non-Competition

Treatment 1

Competition

$(4, 0)

Treatment 2

Non-Competition

$(4, 0)

Treatment 3

Competition

Show-up fee: $6

$(0, -4)

Treatment 4

Non-Competition

$(0, -4)

Treatments: Competition vs. Non-Competition

Treatment 1

Competition

Show-up fee: $2

Treatment 2

Non-Competition

Treatment 3

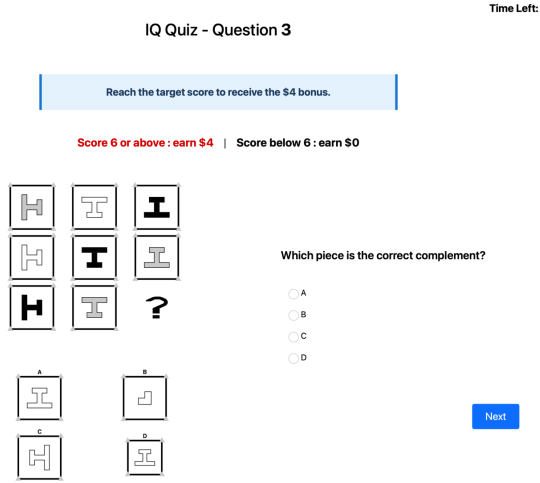
Competition

Show-up fee: $6

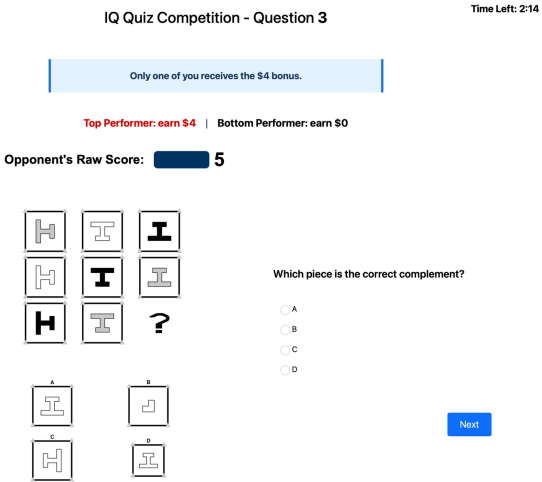
Treatment 4

Non-Competition

Interface: Gain-Framed Non-Competition Treatment



Interface: Gain-Framed Competition Treatment



Why Real-Time Raw Score Bar?

- Heighten the sense of competition
- Prevent participants from inferring competition outcomes
- Mirror real-world settings with partial information about competitors

Experimental Design Structure

Treatment 1

Competition

Show-up fee: $2

$(4, 0)

Treatment 2

Non-Competition

$(4, 0)

Treatment 3

Competition

Show-up fee: $6

$(0, -4)

Treatment 4

Non-Competition

$(0, -4)

Experimental Design Structure

Treatment 1

Competition

Show-up fee: $2

$(4, 0)

Treatment 2

Non-Competition

$(4, 0)

Treatment 3

Competition

Show-up fee: $6

$(0, -4)

Treatment 4

Non-Competition

$(0, -4)

Survey

Experimental Design Highlight: Unknown Outcomes

- No information about competition outcomes

  e.g. whether the individual wins

- No information about goal-achievement outcomes

  e.g. whether the individual meets the threshold

Primary Survey Measures

- Utility

Primary Survey Measures

- Utility
- Preference for the task

Primary Survey Measures

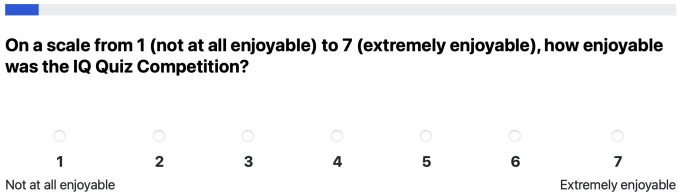
- Utility
- Preference for the task
- Zero-sum thinking
- Altruism

Primary Survey Measures

- Utility
- Preference for the task
- Zero-sum thinking
- Altruism
- Belief about winning

Primary Survey Measures

- **Utility**
- Preference for the task
- Zero-sum thinking
- Altruism
- Belief about winning



Primary Survey Measures

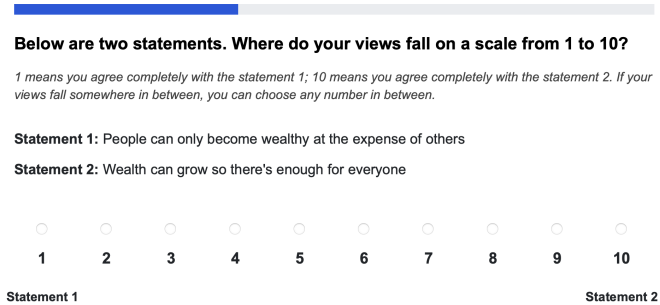
- Utility
- **Preference for the task**
- Zero-sum thinking
- Altruism
- Belief about winning

Imagine you have another IQ quiz in front of you right now, similar to the one you just completed, but with a different set of fifty questions. You again have 4 minutes to answer as many as possible. If you get at least 6 questions correct within the 4 minutes, you will receive a payment. Below is a list of payment amounts. For each amount, please indicate 'Yes' if you would be willing to take the quiz for that payment, or 'No' if you would not.

$0.20	Yes, I would take	No, I would not take
$0.40	Yes, I would take	No, I would not take
$0.60	Yes, I would take	No, I would not take
$0.80	Yes, I would take	No, I would not take
$1.00	Yes, I would take	No, I would not take
$1.20	Yes, I would take	No, I would not take
$1.40	Yes, I would take	No, I would not take
$1.60	Yes, I would take	No, I would not take
$1.80	Yes, I would take	No, I would not take
$2.00	Yes, I would take	No, I would not take
$2.50	Yes, I would take	No, I would not take
$3.00	Yes, I would take	No, I would not take
$5.00	Yes, I would take	No, I would not take

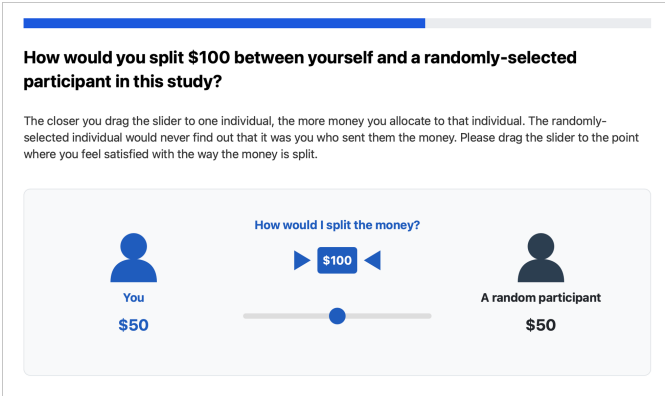
Primary Survey Measures

- Utility
- Preference for the task
- **Zero-sum thinking**
- Altruism
- Belief about winning



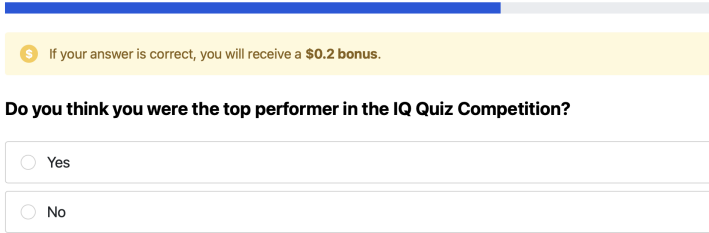
Primary Survey Measures

- Utility
- Preference for the task
- Zero-sum thinking
- **Altruism**
- Belief about winning



Primary Survey Measures

- Utility
- Preference for the task
- Zero-sum thinking
- Altruism
- **Belief about winning**

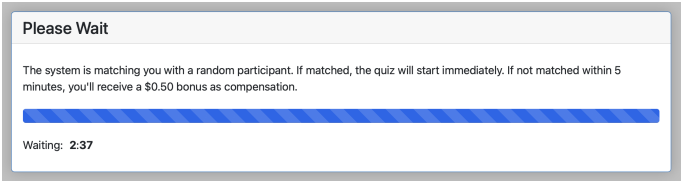


Experimental Implementation

Data Collection

- Date: June 2025
- Platform: Prolific
- Sample: US citizens, Age $>$ 18, Approval rate $>$ 95%
- Real-time Participant Matching

Participant Matching Screen



- ✓ Max wait time: 5 minutes
- ✓ Unmatched: $0.50 bonus
- ✓ Avg waiting time: 19 seconds

Pre-Treatment Covariates Balance

	(1)	(2)	(3)	(4)	(5)	(6)
	Gain Framing		Loss Framing		Difference	
	Competition	Control	Competition	Control	(1)-(2)	(3)-(4)
Age	39.72	40.21	38.97	41.55	-0.50	-2.58*
	(13.64)	(13.13)	(13.75)	(13.06)	[0.71]	[0.06]
Female	0.51	0.52	0.50	0.50	-0.01	0.00
	(0.50)	(0.50)	(0.50)	(0.50)	[0.84]	[0.96]
White	0.62	0.59	0.56	0.61	0.03	-0.05
	(0.49)	(0.49)	(0.50)	(0.49)	[0.52]	[0.34]
Bachelor	0.45	0.45	0.51	0.44	0.00	0.07
	(0.50)	(0.50)	(0.50)	(0.50)	[0.99]	[0.15]
Full-time	0.64	0.57	0.69	0.69	0.08	0.00
	(0.48)	(0.50)	(0.46)	(0.46)	[0.12]	[0.97]
Observations	194	196	198	199	390	397

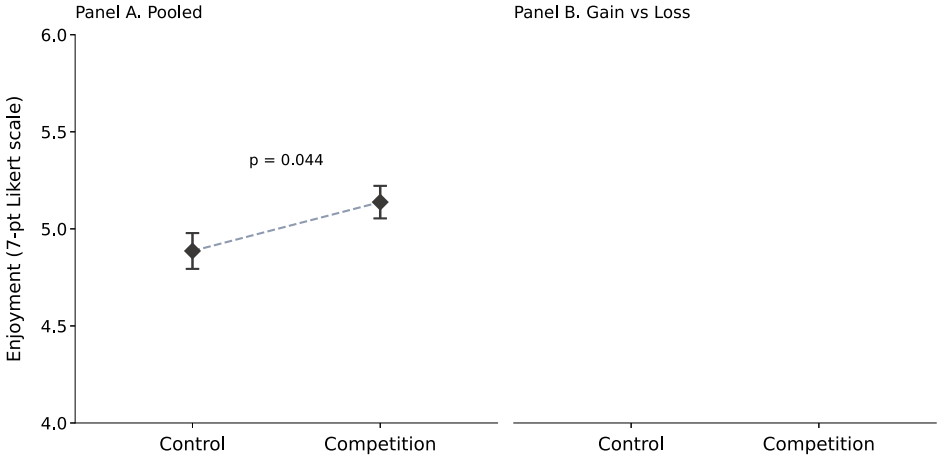
Notes: std. dev. in parentheses; p-values in brackets. F-tests: gain p = 0.61, loss p = 0.17.

Experimental Results

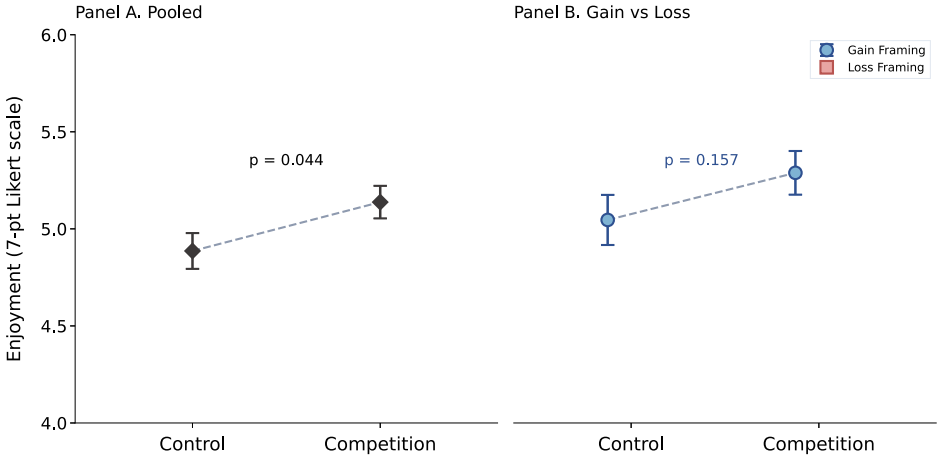
Recap of Main Research Questions

- Competition $\overset{?}{\Longrightarrow}$ Utility
- Mechanisms
- Second-order consequences of these utility effects
  - $\overset{?}{\Longrightarrow}$ Preference for the task
  - $\overset{?}{\Longrightarrow}$ Zero-sum thinking and Altruism

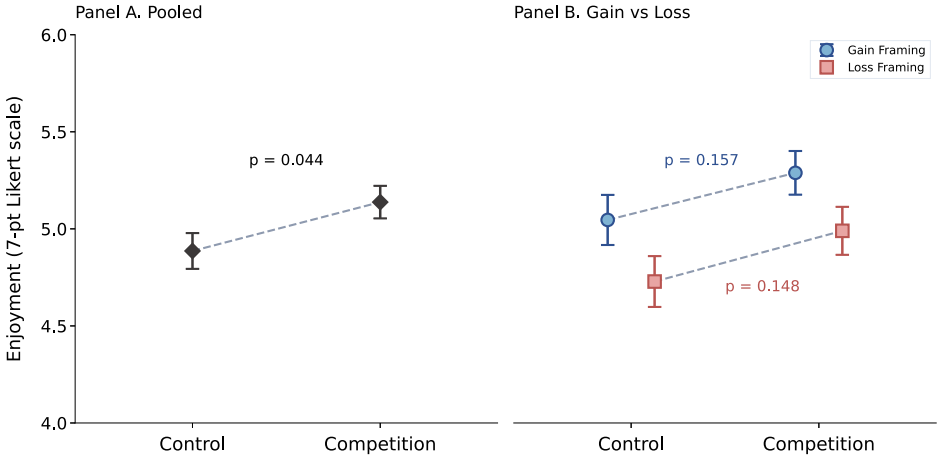
Competition Increases Utility



Competition Increases Utility with Gain-Framed Rewards



Competition Increases Utility with Loss-Framed Rewards



Finding 1: Competition Increases Utility

- Competition increases utility in both gain- and loss-framed reward structures.
- The utility levels in loss frames are consistently lower than that in gain frames.

Three Channels Driving Utility Effects

$$U^C = \underbrace{\mathbf{p^C} \cdot r^{\text{win}} + (1 - \mathbf{p^C}) \cdot r^{\text{lose}}}_{\textit{monetary utility}} + \underbrace{\psi^{\mathbf{C}}}_{\textit{non-monetary utility}} - \underbrace{c(\mathbf{e^C})}_{\textit{cost of effort}}$$

$$U^{NC} = \underbrace{\mathbf{p^{NC}} \cdot r^{\text{pass}} + (1 - \mathbf{p^{NC}}) \cdot r^{\text{fail}}}_{\textit{monetary utility}} + \underbrace{\psi^{\mathbf{NC}}}_{\textit{non-monetary utility}} - \underbrace{c(\mathbf{e^{NC}})}_{\textit{cost of effort}}$$

Three Channels Driving Utility Effects

$$U^C = \underbrace{\mathbf{p^C} \cdot r^{\text{win}} + (1 - \mathbf{p^C}) \cdot r^{\text{lose}}}_{\textit{monetary utility}} + \underbrace{\psi^{\mathbf{C}}}_{\textit{non-monetary utility}} - \underbrace{c(\mathbf{e^C})}_{\textit{cost of effort}}$$

$$U^{NC} = \underbrace{\mathbf{p^{NC}} \cdot r^{\text{pass}} + (1 - \mathbf{p^{NC}}) \cdot r^{\text{fail}}}_{\textit{monetary utility}} + \underbrace{\psi^{\mathbf{NC}}}_{\textit{non-monetary utility}} - \underbrace{c(\mathbf{e^{NC}})}_{\textit{cost of effort}}$$

- Competition affects utility via three channels:

  → (i) **p** belief channel, (ii) ψ preference channel, (iii) **e** effort channel

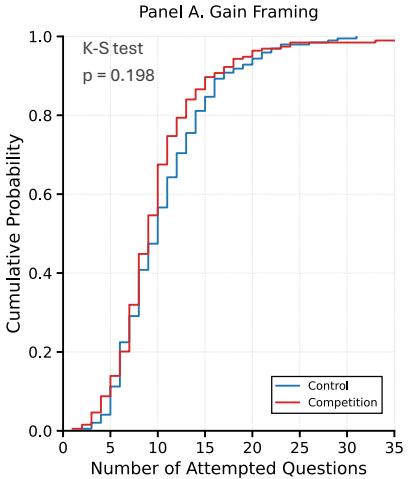
Treatment Effects of Competition on Utility

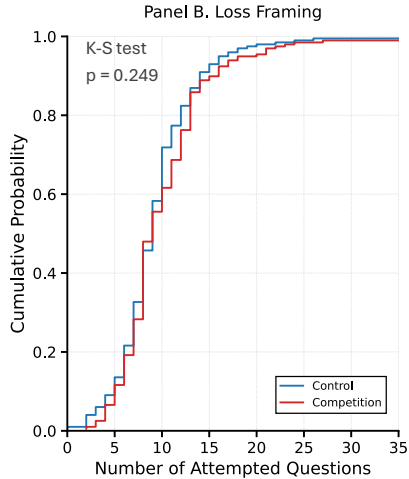
	Dependent Variable: Enjoyment								
	Pooled			Gain Framing			Loss Framing		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Competition	0.25**			0.24			0.26		
	(0.12)			(0.17)			(0.18)		
Control mean	4.89			5.05			4.73		
Observations	787			390			397		

Utility Effects Are Not Driven by the Effort Channel

	Dependent Variable: Enjoyment								
	Pooled			Gain Framing			Loss Framing		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Competition	0.25**	0.25**		0.24	0.23		0.26	0.28	
	(0.12)	(0.12)		(0.17)	(0.17)		(0.18)	(0.18)	
Effort Proxy		-0.02			-0.02			-0.03	
		(0.01)			(0.02)			(0.02)	
Control mean	4.89	4.89		5.05	5.05		4.73	4.73	
Observations	787	787		390	390		397	397	

Utility Effects Are Not Driven by the Effort Channel





Utility Effects Are Not Driven by the Effort Channel

	Dependent Variable: Enjoyment								
	Pooled			Gain Framing			Loss Framing		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Competition	0.25**	0.25**		0.24	0.23		0.26	0.28	
	(0.12)	(0.12)		(0.17)	(0.17)		(0.18)	(0.18)	
Effort Proxy		-0.02			-0.02			-0.03	
		(0.01)			(0.02)			(0.02)	
Control mean	4.89	4.89		5.05	5.05		4.73	4.73	
Observations	787	787		390	390		397	397	

Belief and Preference Channels Drive Utility Effects

	Dependent Variable: Enjoyment								
	Pooled			Gain Framing			Loss Framing		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Competition	0.25**	0.25**	0.45***	0.24	0.23	0.45***	0.26	0.28	0.45***
	(0.12)	(0.12)	(0.12)	(0.17)	(0.17)	(0.16)	(0.18)	(0.18)	(0.17)
Effort Proxy		-0.02			-0.02			-0.03	
		(0.01)			(0.02)			(0.02)	
Believe Win			1.36***			1.39***			1.31***
			(0.14)			(0.20)			(0.20)
Control mean	4.89	4.89	4.89	5.05	5.05	5.05	4.73	4.73	4.73
Observations	787	787	787	390	390	390	397	397	397

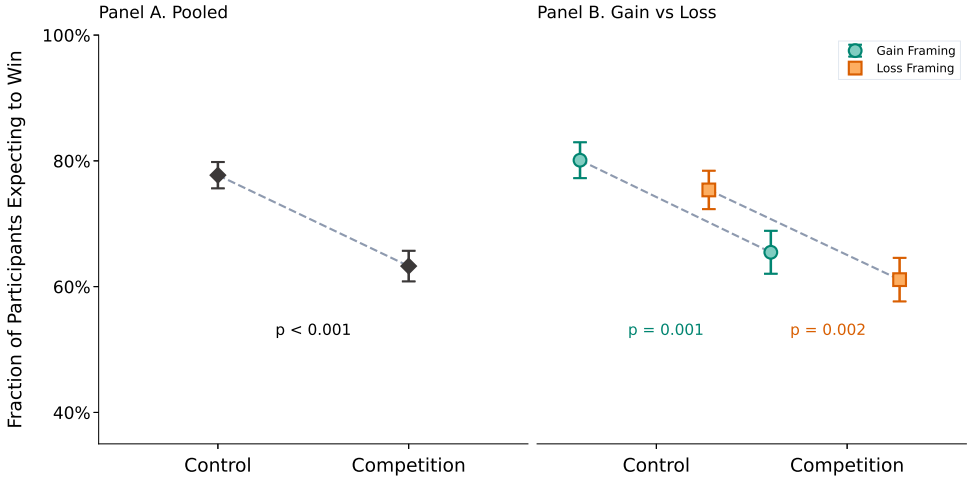
Finding 2: Preference Channel Driving Utility Effects

- Preference Channel
  - → Competition increases utility through the preference channel.
  - → Individuals instrinsically enjoy competing with others.

Belief and Preference Channels Drive Utility Effects

	Dependent Variable: Enjoyment								
	Pooled			Gain Framing			Loss Framing		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Competition	0.25**	0.25**	0.45***	0.24	0.23	0.45***	0.26	0.28	0.45***
	(0.12)	(0.12)	(0.12)	(0.17)	(0.17)	(0.16)	(0.18)	(0.18)	(0.17)
Effort Proxy		-0.02			-0.02			-0.03	
		(0.01)			(0.02)			(0.02)	
Believe Win			1.36***			1.39***			1.31***
			(0.14)			(0.20)			(0.20)
Control mean	4.89	4.89	4.89	5.05	5.05	5.05	4.73	4.73	4.73
Observations	787	787	787	390	390	390	397	397	397

Competition Reduces Beliefs About Winning



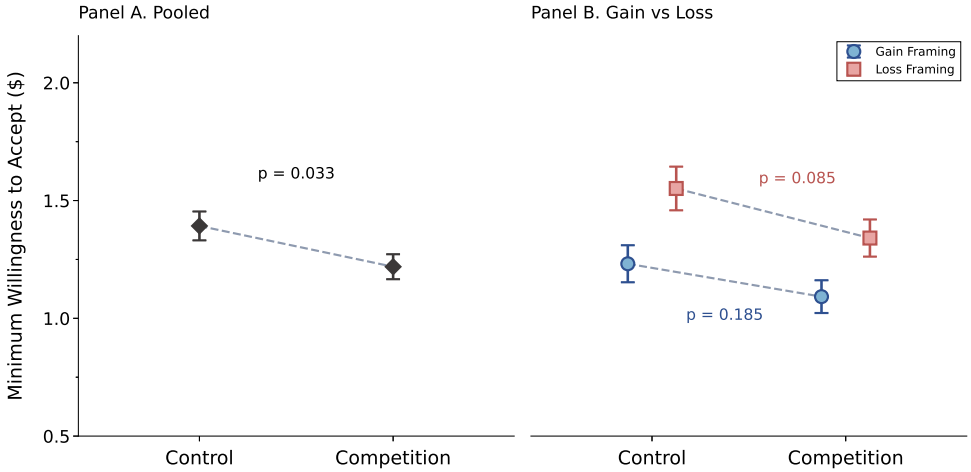
Finding 2: Two Opposing Channels Driving Utility Effects

- Preference Channel
  - → Competition increases utility through the preference channel.
  - → Individuals instrinsically enjoy competing with others.
- Belief Channel
  - → Competition reduces utility through the belief channel.
  - → Competition reduces beliefs about winning, which lowers utility

Recap of Main Research Questions

- Competition $\uparrow$ $\Longrightarrow$ Utility $\uparrow$
- Mechanisms
  - $\overset{\checkmark}{\Longrightarrow}$ Belief channel (-)
  - $\overset{\checkmark}{\Longrightarrow}$ Preference channel (+)
  - $\overset{\times}{\Longrightarrow}$ Effort channel
- Second-order consequences of utility effects
  - $\overset{?}{\Longrightarrow}$ Preference for the task
  - $\overset{?}{\Longrightarrow}$ Zero-sum thinking and Altruism

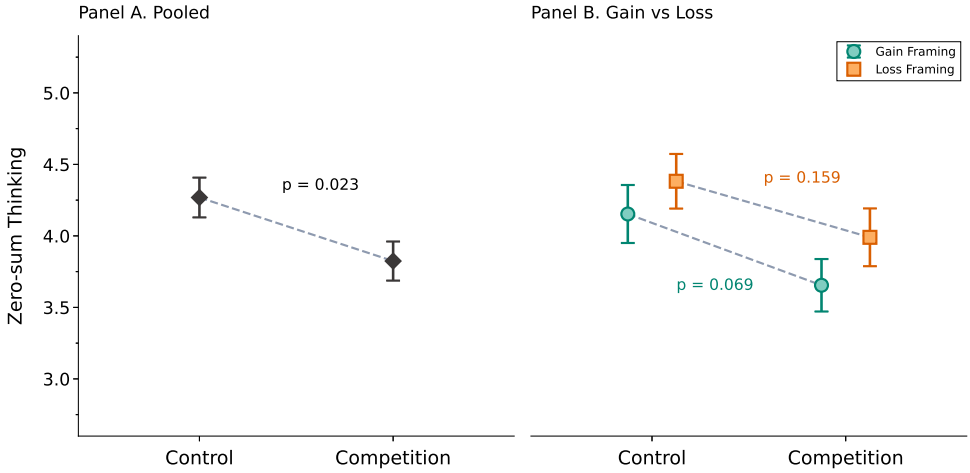
Competition Increases Preference for the Task



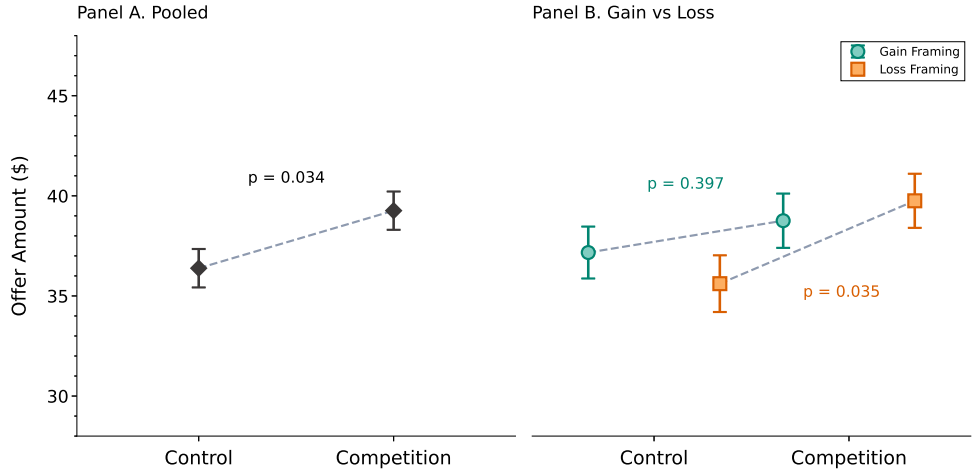
Finding 3: Competition Increases Preference for the Task

- Competition Increases Preference for the Task
  - → More willing to repeat the task, even without competition
  - → Evidence for Attribution bias

Enjoyable Competition Reduces Zero-sum Thinking



Enjoyable Competition Increases Altruism



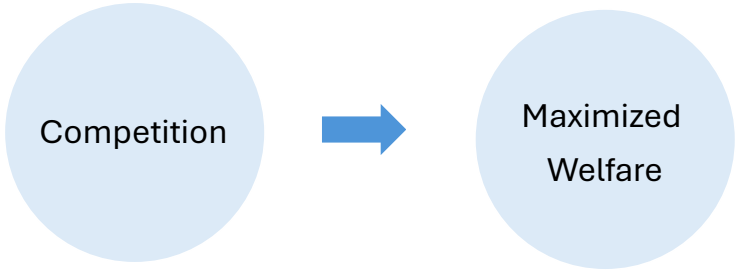
Finding 4: Enjoyable Competition Improves Prosociality

- Enjoyable competition positively affects social behavior
  - → Enjoyable competition reduces zero-sum thinking.
  - → Enjoyable competition increases altruistic behavior.

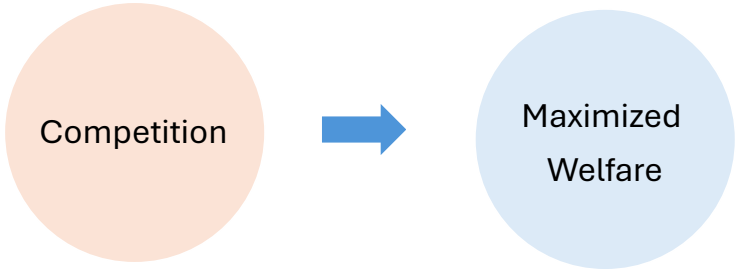
Wrap Up

- Competition ↑ $\Longrightarrow$ Utility ↑
- Mechanisms
  - $\overset{\checkmark}{\Longrightarrow}$ Belief channel (-)
  - $\overset{\checkmark}{\Longrightarrow}$ Preference channel (+)
  - $\overset{\times}{\Longrightarrow}$ Effort channel
- Second-order Consequences of Utility effects
  - $\Longrightarrow$ Preference for the task ↑
  - $\Longrightarrow$ Zero-sum thinking and Pro-social behavior ↑

Competition as a Powerful Tool for Improving Welfare



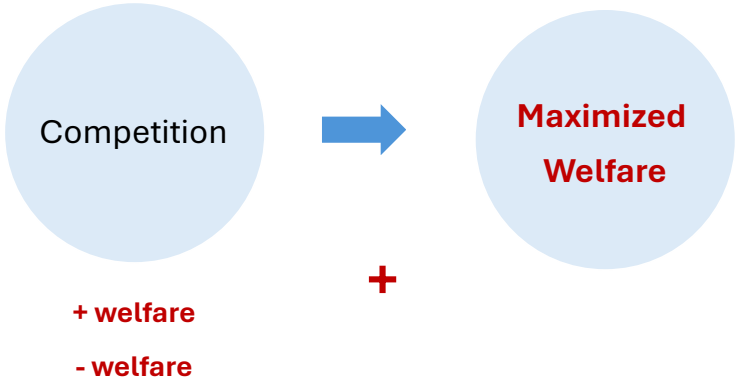
Competition Itself as a Source of Welfare



+ welfare

- welfare

Utility Effects of Competition Matter for Welfare Analysis



Thank you!

Email: jiaruiw@bu.edu

Website: jiaruiww.github.io