Do Gamified Social Interactions on a Green Fintech App Nudge Users' Green Investments?

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SCAN ME

RESEARCH QUESTION

How do gamified social interactions on a large fintech app affect the green fund holding proportion in users' portfolios?

MOTIVATION: GAMES DO INFLUENCE

- Gamification: the use of game-design techniques in non-game contexts.
- It has been widely adopted to influence people's behavior: user engagement, mental wellness, and cognitive abilities.

Researchers have added puzzles to the game Minecraft to help study behavior. Credit: Matthew Tostevin/Reuters
Nature https://www.nature.com/articles/d41586-023-00065-6

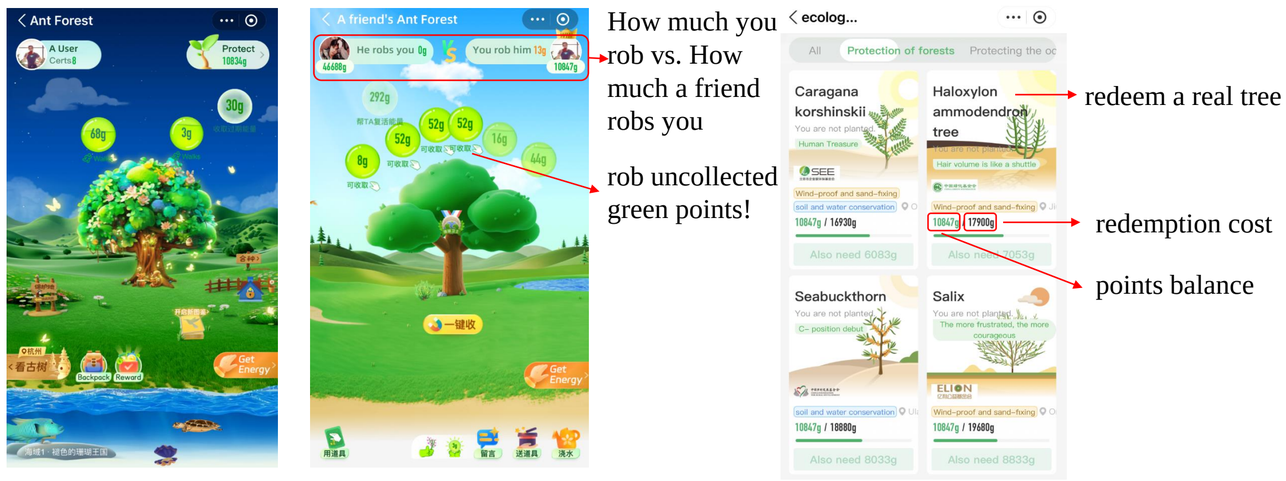
https://www.medicaldaily.com/video-games-cognitive-performance-call-duty-389119

- Gamification may also serve as a powerful tool to encourage green investment.
- Important:
  - Understanding gamification as a novel driver of investing in green assets, which accounts for one-third of global financial assets.
  - Using game-like design in fintech apps to motivate sustainable investment offers a promising approach in the fight against climate change.

MAIN FINDING

- Using a novel dataset from Ant Forest, a mini-app within Alipay, we provide causal evidence that gamified social interactions plausibly induce individuals' green preference, which subsequently enhances their green mutual fund holdings.
- Suggestive evidence: Gamification fosters green preferences via green education.
- Our findings are stronger among male and younger users and those less involved in environmental conservation actions.

DATA AND RESEARCH DESIGN



- **Ant Forest** mini-app: monthly records on 48 certified low-carbon activities (green points), Game profiles (gamified social interaction of robbing activities), Donations activities (redemption to plant trees or protect eco-damaged areas).
- **Ant Fortune** mini-app: monthly updates from October 2018 to September 2022 on users' fund purchases and sales (in RMB), end-of-month holdings, returns, and demographic information.
- 2SLS regression:

$$IntentGreenPoints_{i,t} = \alpha + \beta \times GamifiedSI_{i,t} + Controls_{i,t} + FEs + \varepsilon_{i,t}$$

$$GreenHoldProp_{i,t+1} = \alpha + \beta \times FittedIntentGreenPoints_{i,t} + Controls_{i,t} + FEs + \varepsilon_{i,t}$$

- *GamifiedSI*: the sum of green points robbed by friends and gained by robbing friends.
- *IntentGreenPoints*: green points gained from 16 intentional low-carbon activities that indicate green preferences.
- $GreenHoldProp$: the ratio of green fund holding values relative to total fund holding values.

BASELINE RESULT

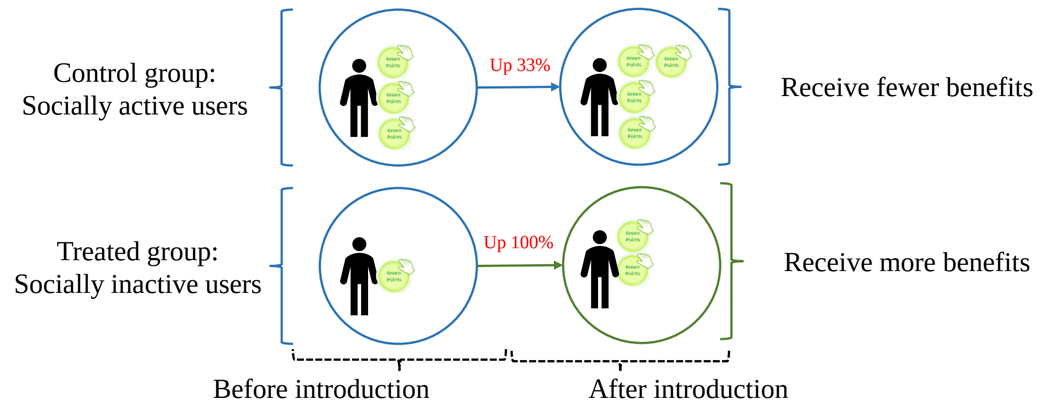
- A one-standard-deviation increase in *GamifiedSI* increases *GreenHoldProp* by 15 bps, or 1.12% of its standard deviation (an average increase of 342 RMB in green fund holdings per user).

Dependent variable = *IntentGreenPoints*	(1)	(2)	(3)
RobSI	0.1039***		
	(0.0016)		
RobbedSI		0.0261***	
		(0.0008)	
GamifiedSI			0.1100***
			(0.0016)
Controls	Yes	Yes	Yes
User & month FE	Yes	Yes	Yes
Observations	2,895,184	2,895,184	2,895,184
Adj. R^2	0.3537	0.3512	0.3541

Dependent variable = $GreenHoldProp_{t+1}$	(1)	(2)	(3)
FittedIntentGreenPoints (with RobSI)	0.0127***		
	(0.0011)		
FittedIntentGreenPoints (with RobbedSI)		0.0299***	
		(0.0037)	
FittedIntentGreenPoints (with GamifiedSI)			0.0143***
			(0.0011)
Controls	Yes	Yes	Yes
User & month FE	Yes	Yes	Yes
Observations	2,808,494	2,808,494	2,808,494
Adj. R^2	0.4763	0.4762	0.4763

IDENTIFICATION

- DID: Using "Energy Double Click Card" as an exogenous shock to increase gamified social interactions.
- Allows users to rob double the green points, but only limited uses
- Greater marginal benefits for less engaged users (previously inactive users)



Dependent variable $GreenHoldProp_{t+1}$	*GamifiedSI/ GreenPoints*	# Clicks	*IntentGreenPoin*
	(1)	(2)	(3)	(4)
*Post*Treat*	0.0053***	0.3694***	11.3929***	0.0267***
	(0.0009)	(0.0388)	(0.2192)	(0.0071)
Controls	Yes	Yes	Yes	Yes
User & month FE	Yes	Yes	Yes	Yes
Observations	231,795	231,795	231,795	231,795
Adj. R^2	0.3987	0.3313	0.5995	0.3007

GREEN EDUCATION AS A CHANNEL

- Gamification increases users' exposure to green educational content, which may lead to stronger green preference

Dependent variable = # Clicks	(1)	(2)	(3)
RobSI	734.9989***		
	(1.8504)		
RobbedSI		306.0777***	
		(1.1121)	
GamifiedSI			822.4736***
			(1.8163)
Controls	Yes	Yes	Yes
User & month FE	Yes	Yes	Yes
Observations	2,895,184	2,895,184	2,895,184
Adj. R^2	0.7408	0.7089	0.7532