

Threshold Funding

Orpheus Lummis at HackWasm 2022

General idea: Tools to win game theory

Blockchain as a trusted coordination mechanism.

Useful to improve social dilemmas and strategic interactions.

	Left	Right
Left	8, 8	0, 0
Right	0, 0	8, 8

Fig. 2 *Pure Coordination*

	Contribute	Defect
Contribute	8, 8	0, 0
Defect	0, 0	5, 5

Fig.3 *Assurance Game*

	Football	Shopping
Football	8, 5	0, 0
Shopping	0, 0	5, 8

Fig. 4 *Battle of the Sexes*

	Stag	Hare
Stag	8, 8	0, 7
Hare	7, 0	5, 5

Fig. 5 *Stag Hunt*

Assurance contract

Mechanism facilitating the voluntary creation of public or club goods in the face of collective action problems, such as the free rider problem.

Examples:

- NFT content is de-encrypted only if $>N$ coins are staked
- Event happens only if $>N$ confirmed attendees
- Project funded only if $>N$ threshold coin, e.g. charter city

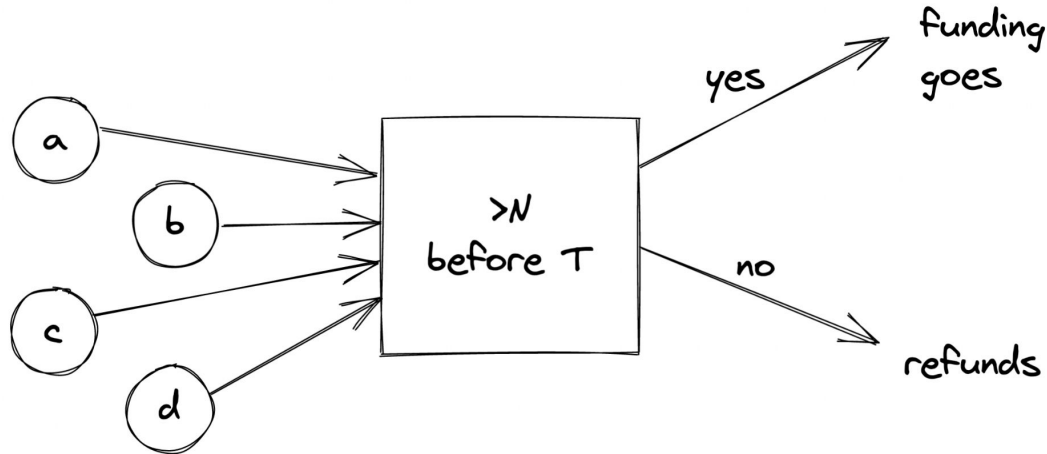
Otherwise pledgers are refunded, collective action is cancelled, etc

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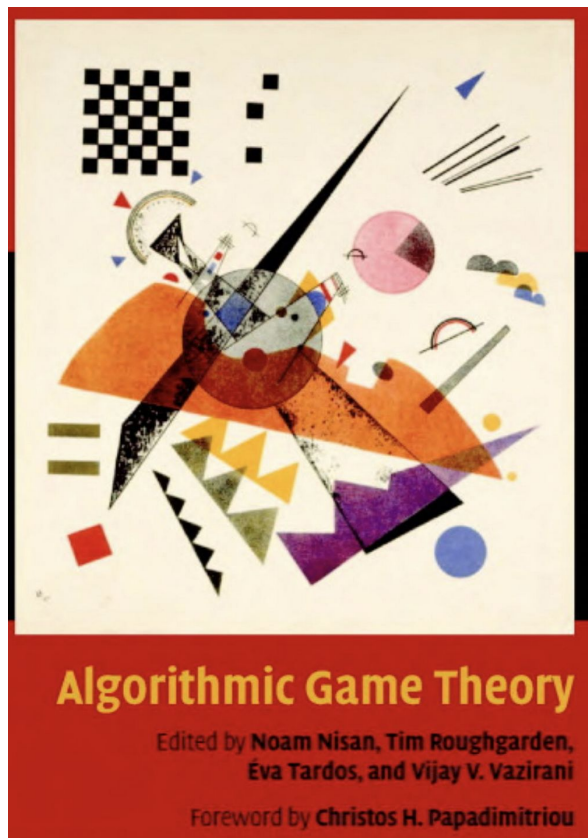
Mechanism for conditional funding of a project.

Initial parameters: threshold, deadline, receiver.

Funding goes through only if a minimum amount is met, otherwise each contributor is refunded.



Ideation



Dominant assurance contracts: incentive-aligned public good participation

Multilateral contracts

Randomized mechanisms

Incentive-compatibility: following true preference -> best outcome

Truthfulness: best outcome by being truthful

...

Ideation

V · T · E

Topics in game theory

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Definitions

Congestion game · Cooperative game · Determinacy · Escalation of commitment · Extensive-form game · First-player and second-player win · Game complexity · Graphical game · Hierarchy of beliefs · Information set · Normal-form game · Preference · Sequential game · Simultaneous game · Simultaneous action selection · Solved game · Succinct game

Equilibrium concepts

Bayesian Nash equilibrium · Berge equilibrium · Core · Correlated equilibrium · Epsilon-equilibrium · Evolutionarily stable strategy · Gibbs equilibrium · Mertens-stable equilibrium · Markov perfect equilibrium · Nash equilibrium · Pareto efficiency · Perfect Bayesian equilibrium · Proper equilibrium · Quantal response equilibrium · Quasi-perfect equilibrium · Risk dominance · Satisfaction equilibrium · Self-confirming equilibrium · Sequential equilibrium · Shapley value · Strong Nash equilibrium · Subgame perfection · Trembling hand

Strategies

Backward induction · Bid shading · Collusion · Forward induction · Grim trigger · Markov strategy · Dominant strategies · Pure strategy · Mixed strategy · Strategy-stealing argument · Tit for tat

Classes of games

Bargaining problem · Cheap talk · Global game · Intransitive game · Mean-field game · Mechanism design · *n*-player game · Perfect information · Large Poisson game · Potential game · Repeated game · Screening game · Signaling game · Stackelberg competition · Strictly determined game · Stochastic game · Symmetric game · Zero-sum game

Games

Go · Chess · Infinite chess · Checkers · Tic-tac-toe · Prisoner's dilemma · Gift-exchange game · Optional prisoner's dilemma · Traveler's dilemma · Coordination game · Chicken · Centipede game · Lewis signaling game · Volunteer's dilemma · Dollar auction · Battle of the sexes · Stag hunt · Matching pennies · Ultimatum game · Rock paper scissors · Pirate game · Dictator game · Public goods game · Blotto game · War of attrition · El Farol Bar problem · Fair division · Fair cake-cutting · Cournot game · Deadlock · Diner's dilemma · Guess 2/3 of the average · Kuhn poker · Nash bargaining game · Induction puzzles · Trust game · Princess and monster game · Rendezvous problem

Theorems

Arrow's impossibility theorem · Aumann's agreement theorem · Folk theorem · Minimax theorem · Nash's theorem · Purification theorem · Revelation principle · Zermelo's theorem

Fin

<https://github.com/orpheuslummis/threshold-funding>

I am **Orpheus Lummis**. Reach out for discussion and collaboration.

Thanks Jon Ator for the help.