

# Introduction

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# Helicopter tour

I review a subset of what I have done/am working on, collated by keywords

- ▶ Multilateral bargaining
- ▶ public goods provision (public bads minimization)
- ▶ positional concerns

# Keyword 1: Multilateral Bargaining

- ▶ It refers to a situation where a group ( $\geq 3$ ) of people with conflicts of interest try to negotiate over the fixed amount of resources under a pre-specified voting rule and procedure.
- ▶ Anything can happen in non-structured bargaining, so we typically impose a game structure.
- ▶ Baron and Ferejohn (1989): Many-person divide-the-dollar game. Random recognition with replacement. Stationary subgame-perfect equilibrium

# Multilateral Bargaining over the Division of Losses

(resubmitted to GEB)

- ▶ The theoretical prediction of a many-person divide-the-minus-one-dollar game is *not* the flipped prediction of the divide-the-dollar game?
- ▶ Experimental evidence is consistent with the theoretical prediction which is the extreme opposite to what we naively conjectured.

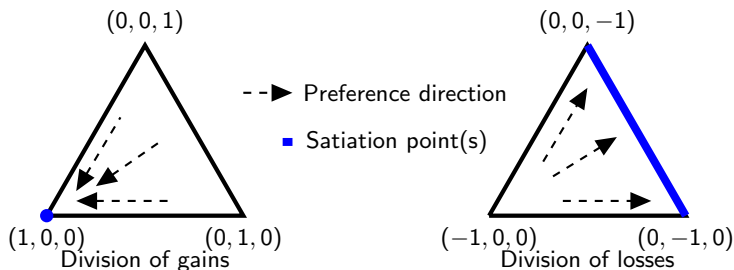


Figure 1: Different preference directions and satiation points

# Recognition without Replacement in Legislative Bargaining

(GEB, 2019)

- ▶ Random recognition with replacement is one unrealistic feature of the Baron-Ferejohn model.
- ▶ It makes the problem easier: every subgame = its supergame.
- ▶ What if previous proposers cannot be in the potential proposer pool until everyone gets the same number of opportunities? It requires a broader notion of stationarity.
- ▶ I characterize the “cycle-stationary” subgame-perfect eqbm.
- ▶ Even when  $\delta = 1$ , the proposer's equilibrium share is smaller.
- ▶ “Punishment” to the previous proposers, not because people are spiteful, but because the previous proposers are cheaper.

# “One Bite at the Apple”: Legislative Bargaining without Replacement

(JoEP, 2023)

- ▶ One-cycle ( $n$ -round) bargaining is considered.
- ▶ Since the proposer advantage had existed in the previous models, we were unable to say further about why we observe the partial rent extraction.
- ▶ One-cycle bargaining has two nice features: (1) Proposer disadvantage is possible, and (2) Out-of-equilibrium coalition choices give us some additional information.
- ▶ I found (1) inequity aversion, even a myopic version of it, is not the driver behind the partial rent extraction, and (2) retaliation and the fear thereof can be a driving factor.

# Multilateral Bargaining with Proposer Selection Contest

(CJE, 2022)

- ▶ Being a proposer is ex-post beneficial. It is natural they want to compete to become a proposer.
- ▶ 1st stage: Tullock contest  
2nd stage: multilateral ultimatum with outside options.
- ▶ Key treatments: homogeneous/heterogeneous outside options, public/private information about the contest behaviors.
- ▶ Main takeaway: Equity and efficiency go hand in hand. In Public-Heterogeneous treatment, the subjects wasted their resources for competition least, and the proposer takes a smaller share.

# Sharing the Burden of Endogenous Negative Externalities

Resubmitted to Ecological Economics

- ▶ Subjects first decide how much they produce environmental bads (say, pollution) for their sake, and then negotiate how to allocate the costs for handling public bads under a majority/unanimity rule.
- ▶ Under the unanimity rule, it is not possible to deter pollution. Everyone has the same veto power, which means that everyone can mess up.
- ▶ Under the majority rule, people often allocate all the costs to the highest polluter. This, in theory, drives players to produce less pollution than others. However, when it is hard to distinguish the most selfish person, everyone fully pollutes.



## Keyword 2: Public Goods/Bads

- ▶ Voluntary contribution for the production of public goods has been studied a lot.
- ▶ Yet there are still some rooms to go forward.

# Population Uncertainty in VCG

(JEBO, 2018)

- ▶ A typical PG game assumes the known number of players.
- ▶ If each player only knows the distribution of the group size, the equilibrium contribution level can be larger than that when the group size is certain at the mean.
- ▶ The possibility of realizing a small(large) size pushes the contribution upward(downward). If the marginal production of the PG is decreasing convex, then the upward push is stronger.
- ▶ No treatment effect on the group size uncertainty with a linear production function. It renders a nice experimental design.
- ▶ Experimental findings are consistent with the predictions.

# A theory of FAQs

(JEBO, 2019)

- ▶ The public announcement, an incomplete set of answers to potential questions raised by heterogeneous information seekers, is a public good: It is non-rivalry and non-exclusive.
- ▶ Information provider offers two channels: A public announcement and a private communication.
- ▶ Heterogeneous information seekers draw questions from a distribution. They can either pay attention to the FAQ (whose digestion cost is ex-ante known) or privately contact the provider (whose contact cost is ex-post determined by the number of other players using the same channel).
- ▶ Main takeaway: The size of the announcement should be smaller than the socially optimal level of the announcement.

# Penalty Lottery

(SJE, 2023)

- ▶ Each player sequentially faces a chance of producing public bads for his sake. When the action is monitored, he needs to pay the fine, but the probability of being monitored is low (and fixed). Increasing the nominal value of the fine is not ideal.
- ▶ A violator (who got monitored his public bad production) passes the fine to the next potential violator with probability  $q$ , and pays all the accumulated fines with probability  $1 - q$ .
- ▶ The penalty lottery *self-selects* those with more willingness to produce public bads and imposes the larger expected fines.
- ▶ It has advantages over the day fine system, as it can endogenously implement the day fine system.
- ▶ Strong experimental support for the theoretical predictions.

# Vaccination Lottery

(EL, 2021)

- ▶ I compare lottery and lump-sum transfer incentives for vaccinations. Getting vaccinated is a voluntary contribution of the public goods called herd immunity.
- ▶ Overall, vaccination lottery works better.
- ▶ Vaccination lottery incentivizes probability-weighting subjects. In words, people who subjectively overestimate the possibility of severe side effects are more likely overestimate the probability of being the winner of the vaccination lottery.

## Keyword 3: Positional Concerns

- ▶ Positional goods: Goods and services whose utility depends on not only the absolute amount of spending but also the *relative position* compared to others in the same category.
- ▶ It is not just conspicuous goods or luxury goods.
- ▶ Any forms of competition feature positional externality.
- ▶ Theoretically, it is a nice mixture of optimal taxation theory (for mitigating negative externality) and a contest theory (as a higher relative rank in a contest implies a larger payoff).
- ▶ It is different from the Keeping-up-with-Joneses utility.

$$U(c, l; \bar{c}) = \ln c - l^2 - (c - \bar{c})^2$$

$$U(c, l; F(c)) = (1 - \alpha)(\ln c - l^2) + \alpha F(c)$$

# Positional Concern and Low Demand for Redistribution of the Poor

(EJPE, 2019)

- ▶ Puzzle: (1) some poor citizens demand low redistribution and (2) as income inequality becomes more severe a larger proportion of citizens make less demand for redistribution
- ▶ When citizens care about their relative position on consumption, and their labor productivity is slightly perturbed when a new tax policy is implemented, only middle-income citizens may vote for redistribution.
- ▶ For the poor (with last-place aversion), the marginal disutility of losing their current rank may be larger than the marginal utility of getting monetary subsidy.
- ▶ If positional concern is the main driving factor, policymakers should focus on increasing the low-income citizens' standard of living to the middle class; and if the POUM is main, then they should focus on minimizing income gaps.

# The Second-Tier Trap

(IJET, 2018)

- ▶ One of my favorites but published at a low level journal
- ▶ Three ex-ante identical players exclusively choose the “supporting environment,” and the winner is the one with the largest  $o_i = e_i + \varepsilon_i$ .  $Payoff = Prize * WinProb - e_i^2$
- ▶ Who is the biggest loser?
- ▶ The second-tier trap (STT) is a situation in which a player from the second-tier environment has the worst expected payoff even though his expected environmental support is strictly greater than that of the third-tier player.
- ▶ Experimental subjects are trapped at the second tier. When the first-tier environment is taken by someone else, they mostly choose the second-tier environment and input excessive investments, which is the wrong decision.



## Rank versus Inequality—Does Gender Composition Matter?

- ▶ Concerns for the relative rank may drive people to make inefficient decisions: Last-place aversion.
- ▶ Think about a trade-off situation where (1) I can decrease economic inequality by giving up my rank marginally, or (2) I can keep up my rank while marginally exacerbating inequality.
- ▶ If the rank above and rank below you are the different gender, that is, giving up a rank doesn't affect your relative rank in the same gender, would you change your decision?

## working papers/ work in progress

- ▶ Viable Nash Equilibria: An Experiment (with Daehong Min and John Wooders), resubmitted to ET
- ▶ Clustering standard errors at the “session” level
- ▶ The Effect of Chosen or Given Luck on Honesty (with Franziska Heinicke and Diogo Geraldes)
- ▶ Positive and Negative Selection in Bargaining (with Dongkyu Chang and Wooyoung Lim),
- ▶ Unveiling the Failure of Positive Selection (with Dongkyu Chang and Wooyoung Lim)
- ▶ From Helping Hand to Stumbling Block: the ChatGPT Paradox in Competency Experiment
- ▶ Strategically Motivated (with Jeongbin Kim)
- ▶ Paradoxes of Network in Bargaining (with Joosung Lee)