

# Democratic Policy Decisions with Decentralized Promises Contingent on Vote Outcome

Ali Lazrak    Jianfeng Zhang

UBC

USC

**ESEM Barcelona**  
**Barcelona, August 29, 2023**

# Motivation

- There is a stigma with vote trading: Voting is a moral duty that is not amenable to trading

# Motivation

- There is a stigma with vote trading: Voting is a moral duty that is not amenable to trading
- “Vote trading” in the form of pre-vote interaction is however common:

# Motivation

- There is a stigma with vote trading: Voting is a moral duty that is not amenable to trading
- “Vote trading” in the form of pre-vote interaction is however common:

# Motivation

- There is a stigma with vote trading: Voting is a moral duty that is not amenable to trading
- “Vote trading” in the form of pre-vote interaction is however common:
  - ▶ **Trading vote for vote:** “Logrolling” in legislatures

# Motivation

- There is a stigma with vote trading: Voting is a moral duty that is not amenable to trading
- “Vote trading” in the form of pre-vote interaction is however common:
  - ▶ **Trading vote for vote:** “Logrolling” in legislatures
  - ▶ **pre-vote negotiation on political bills:** Democrats amended the recent economic stimulus bill to get the pivotal support of Joe Manchin.

# Motivation

- There is a stigma with vote trading: Voting is a moral duty that is not amenable to trading
- “Vote trading” in the form of pre-vote interaction is however common:
  - ▶ **Trading vote for vote:** “Logrolling” in legislatures
  - ▶ **pre-vote negotiation on political bills:** Democrats amended the recent economic stimulus bill to get the pivotal support of Joe Manchin.
  - ▶ **Decoupling:** Borrow shares to use their voting rights prior to shareholders meetings

# Motivation

- There is a stigma with vote trading: Voting is a moral duty that is not amenable to trading
- “Vote trading” in the form of pre-vote interaction is however common:
  - ▶ **Trading vote for vote:** “Logrolling” in legislatures
  - ▶ **pre-vote negotiation on political bills:** Democrats amended the recent economic stimulus bill to get the pivotal support of Joe Manchin.
  - ▶ **Decoupling:** Borrow shares to use their voting rights prior to shareholders meetings
  - ▶ **Support building in takeovers:** Acquires make promises to labor unions to entice them to support a takeover



# Motivation

- There is a stigma with vote trading: Voting is a moral duty that is not amenable to trading
- “Vote trading” in the form of pre-vote interaction is however common:
  - ▶ **Trading vote for vote:** “Logrolling” in legislatures
  - ▶ **pre-vote negotiation on political bills:** Democrats amended the recent economic stimulus bill to get the pivotal support of Joe Manchin.
  - ▶ **Decoupling:** Borrow shares to use their voting rights prior to shareholders meetings
  - ▶ **Support building in takeovers:** Acquires make promises to labor unions to entice them to support a takeover
- Normative implications of vote trading are not clear:

# Motivation

- There is a stigma with vote trading: Voting is a moral duty that is not amenable to trading
- “Vote trading” in the form of pre-vote interaction is however common:
  - ▶ **Trading vote for vote:** “Logrolling” in legislatures
  - ▶ **pre-vote negotiation on political bills:** Democrats amended the recent economic stimulus bill to get the pivotal support of Joe Manchin.
  - ▶ **Decoupling:** Borrow shares to use their voting rights prior to shareholders meetings
  - ▶ **Support building in takeovers:** Acquires make promises to labor unions to entice them to support a takeover
- Normative implications of vote trading are not clear:
  - ▶ Vote trading allows to express the intensity of preferences (good)

# Motivation

- There is a stigma with vote trading: Voting is a moral duty that is not amenable to trading
- “Vote trading” in the form of pre-vote interaction is however common:
  - ▶ **Trading vote for vote:** “Logrolling” in legislatures
  - ▶ **pre-vote negotiation on political bills:** Democrats amended the recent economic stimulus bill to get the pivotal support of Joe Manchin.
  - ▶ **Decoupling:** Borrow shares to use their voting rights prior to shareholders meetings
  - ▶ **Support building in takeovers:** Acquires make promises to labor unions to entice them to support a takeover
- Normative implications of vote trading are not clear:
  - ▶ Vote trading allows to express the intensity of preferences (good)
  - ▶ Trading votes generates externalities on non-trading members (bad)

# Motivation

- There is a stigma with vote trading: Voting is a moral duty that is not amenable to trading
- “Vote trading” in the form of pre-vote interaction is however common:
  - ▶ **Trading vote for vote:** “Logrolling” in legislatures
  - ▶ **pre-vote negotiation on political bills:** Democrats amended the recent economic stimulus bill to get the pivotal support of Joe Manchin.
  - ▶ **Decoupling:** Borrow shares to use their voting rights prior to shareholders meetings
  - ▶ **Support building in takeovers:** Acquires make promises to labor unions to entice them to support a takeover
- Normative implications of vote trading are not clear:
  - ▶ Vote trading allows to express the intensity of preferences (good)
  - ▶ Trading votes generates externalities on non-trading members (bad)
- This paper: **Evaluation of the practice of promises contingent on the collective decision of a committee ruled by a qualified majority rule.**

# This paper

- A committee  $\mathbb{I} = \{1, \dots, I\}$  of  $I$  members vote for a reform versus the status quo with a super majority rule  $\kappa$  (If  $I = 3$ ,  $\kappa = 2$ ).
  - 1 Intensity of preferences for the reform are known  $u_1 \leq u_2 \leq \dots \leq 0 \leq \dots \leq u_I$ .
  - 2 The reform is socially optimal  $\sum_i u_i > 0$ .

- **Timing of the model:**

- 1 Decentralized promises contingent on the committee decision are made between committee members. This results in (net) promises  $\mathbf{r} = (r_1, \dots, r_I)$  (resp.  $\mathbf{s} = (s_1, \dots, s_I)$ ) contingent on adopting (resp. rejecting) the reform that satisfy the zero sum condition:

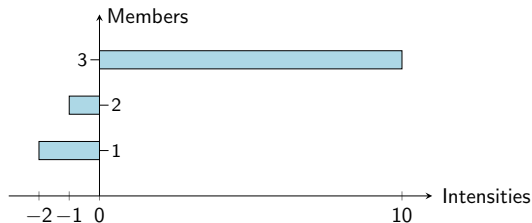
$$\sum_i r_i = \sum_i s_i = 0$$

- 2 Committee member  $i$  vote for or against the reform to maximize the *ex post* intensity

$$v_i^{r,s} := \begin{cases} u_i + r_i & \text{if the reform is adopted;} \\ s_i, & \text{otherwise} \end{cases}$$

- 3 The promises are enforced.
- We define “*the political equilibrium*” and provide insights on the structure of promises that need to be done to implement it.

## Example 1: Committee with 3 members ruled by majority ( $\kappa = 2$ )



- it ex ante utility is  $\mathbf{u} = (-2, -1, 10)$
- Reform is defeated with majority voting:  $\mathbf{u}^0 = (0, 0, 0)$
- Reform is adopted with promises

$$\mathbf{r} = (+3, +2, -5), \quad \mathbf{u}^r = (1, 1, 5);$$

$$\mathbf{r} = (+2, +2, -4), \quad \mathbf{u}^r = (1, 2, 6).$$

- Too many degrees of freedom: **Stability with lowest aggregate promises**

# Main results

## Political Equilibrium

1) No **blocking coalition** exist , 2) The total promises are minimized

- The (efficient) reform is always enacted in equilibrium: If not, blocking coalitions emerge to “grow the total size of the pie” and get a better payoff.
- Multiple equilibria: distributions of transfers among promisers and promisees are indeterminate.
- Equilibrium promises feature
  - ▶ Equilibrium is consistent with promisers' individual rationality:  $r_j + u_j \geq 0$
  - ▶ Push toward equality: Top-down flow of promises.
  - ▶ When the reform lacks support: reform supporters compensates reform opponents to convert them to reform supporters.
  - ▶ When the reform has enough support: Promises are needed to preempt minority coalition to “bribe” the weakest reform supporters
  - ▶ Promises are mainly of “across the aisle type” but they can also be of the type “circle the wagon”.

# The political equilibrium

A coalition  $\mathcal{C}$  of at least two members blocks the promises  $(r, s) \in \mathcal{P}^2$  iff

- 1 **When  $(r, s)$  enacts the reform:** The members of the coalition  $\mathcal{C}$  can make incremental promises contingent on defeating the reform among themselves, defeat the reform and get a strictly Pareto improve the outcome .
- 2 **When the reform is defeated under  $(r, s)$  :** The members of the coalition  $\mathcal{C}$  can make incremental promises contingent on enacting the reform among themselves, enact the reform and get a strictly Pareto improve the outcome.

$(r, s) \in \mathcal{P}^2$  is an equilibrium  $(\mathcal{E})$  iff

- 1 The promises profile  $(r, s) \in \mathcal{P}^2$  is **stable** ( $\mathcal{S}_0$ ): no blocking coalition exist.
- 2 **Cheapest cost of enticement:** The total transfer promise  $\mathcal{T}_{r,s} = \frac{1}{2} \sum_{\mathbb{I}} |r_i| + \frac{1}{2} \sum_{\mathbb{I}} |s_i|$  is minimized



# Equilibrium analysis

## Observation

Equilibria with minimal total promises have the form  $(\mathbf{r}, \mathbf{0})$  or simply  $\mathbf{r}$ .

**Intuition:** if  $(\mathbf{r}, \mathbf{s})$  is stable, then  $(\mathbf{r} - \mathbf{s}, \mathbf{0})$  is also stable and  $\mathcal{T}_{\mathbf{r}-\mathbf{s}, \mathbf{0}} \leq \mathcal{T}_{\mathbf{r}, \mathbf{s}}$ .

## Proposition: Characterization of the stable promises

A promise  $\mathbf{r}$  is stable iff

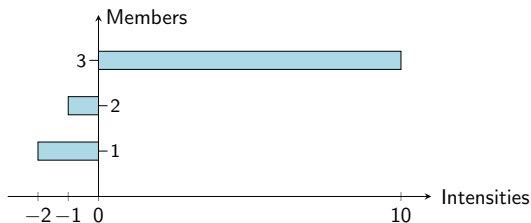
$$\sum_{\mathcal{C}} (u_i + r_i) \geq 0 \text{ for all coalitions } \mathcal{C} \in \mathcal{D}^S.$$

## Proposition: Existence, indeterminacy and efficiency

Stable promises  $\mathbf{r}$  are indeterminate and they all enact the reform:  $D(\mathbf{r}) = R$ .

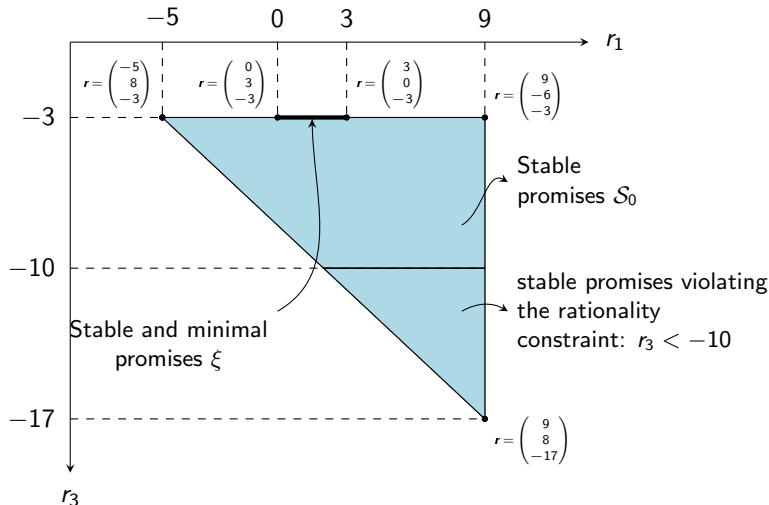
The equilibrium promises are also indeterminate: the multiplicity is not removed by minimizing the total transfer promises  $\mathcal{T}_{\mathbf{r}}$ .

## Example 1 continued: Committee with 3 members ruled by majority



- $\mathbf{u} = (u_1, u_2, u_3) = (-2, -1, 10)$ .
- Zero promises is not an equilibrium:  $u_1 + u_2 = -3 < 0$
- The equilibrium payment promises satisfy  $r_1 + r_2 \geq 3$ ,  $r_1 + r_3 \geq -8$ ,  $r_2 + r_3 \geq -9$  and,  $r_1 + r_2 + r_3 = 0$ .
- Member 3 need to pay 3 to the coalition  $\{1, 2\}$ .
- Equilibrium promises satisfy  $\mathcal{T}_r = 3$ : Member 3 need to promise a total of 3 that members of the coalition  $\{1, 2\}$  share.

## Visualization Example 1: $u = (-2, -1, 10)$

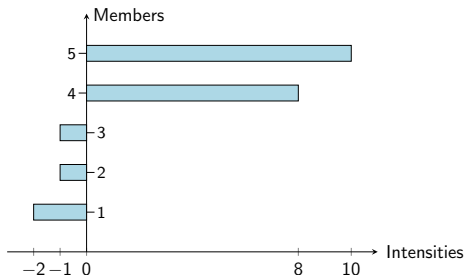


- Minimal promises reduce multiplicity but do not eliminate it.
- Minimal promises are consistent with individual rationality.

## Example 2: Weak support for the reform: $|\mathcal{C}^R| < \kappa$

- A committee with 5 members rules by majority  $\kappa = 3$ :

$$\mathbf{u} = (u_1, u_2, u_3, u_4, u_5) = (-2, -1, -1, 8, 10).$$

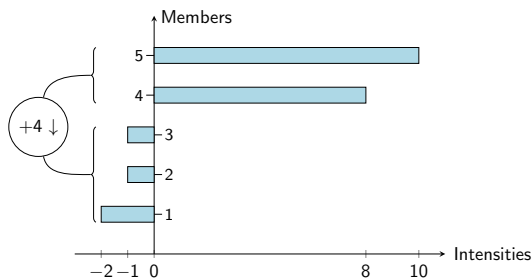


- In any equilibrium,  $\mathcal{T}_r = 4$  and the coalition  $\mathcal{C}^R = \{4, 5\}$  need to promise a total of 4 to the coalition  $\mathcal{C}^S = \{1, 2, 3\}$ .

## Example 2: Weak support for the reform: $|C^R| < \kappa$

- A committee with 5 members rules by majority  $\kappa = 3$ :

$$\mathbf{u} = (u_1, u_2, u_3, u_4, u_5) = (-2, -1, -1, 8, 10).$$



- Examples of equilibria

- ▶  $\mathbf{r} = (2, 1, 1, -2, -2)$  leading to  $\mathbf{v}^r = (0, 0, 0, 6, 8)$ .
- ▶  $\mathbf{r} = (0, 0, 4, 0, -4)$  leading to  $\mathbf{v}^r = (-2, -1, 3, 8, 6)$ .
- ▶  $\mathbf{r} = (2, 1, 0, 0, -3)$  leads to  $\mathbf{v}^r = (1, -1, -1, 8, 7)$  : **unstable !**.

## Equilibrium with strong support for the reform: $|\mathcal{C}^R| \geq \kappa$

- We denote by  $n$  the swing voter for the status quo  $\mathcal{C}^S = \{1, \dots, n\}$  with  $|\mathcal{C}^S| = n \leq l - \kappa$ , so that  $\mathcal{C}^R = \{n + 1, \dots, l\}$ .
- The minority coalition  $\mathcal{C}^S$  can entice members of the coalition

$$\underline{\mathcal{C}}^R = \{n + 1, \dots, l - \kappa + 1\}$$

into voting against the reform

- The coalition  $\mathcal{C}^S$  need to promise a total of  $\underline{U}^R := \sum_{\underline{\mathcal{C}}^R} u_i$  to convince members of the coalition  $\underline{\mathcal{C}}^R$  to vote against the reform.
- The gains from trade of the coalition  $\mathcal{C}^S$  is:

$$G^S = U^S - \underline{U}^R \equiv \sum_{i=1}^n |u_i| - \sum_{i=n+1}^{l-\kappa+1} |u_i|.$$

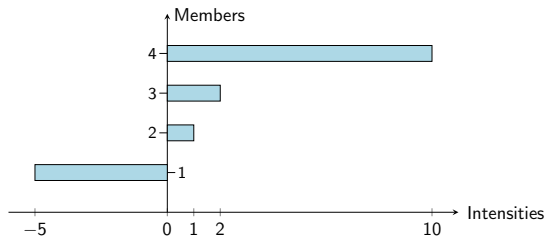
### Proposition 6: No trade equilibrium

Assume  $|\mathcal{C}^R| \geq \kappa$  and  $G^S \leq 0$ . The only equilibrium is the zero promise equilibrium  $\mathbf{r} = \mathbf{0}$ .

## Strong support of the reform, $|\mathcal{C}^R| \geq \kappa$ and $G^S > 0$

- Members of the coalition  $\mathcal{C}^R/\underline{\mathcal{C}}^R$  have to promise  $G^S$  to preempt members of the coalition  $\mathcal{C}^S$  from “bribing” the coalition  $\underline{\mathcal{C}}^R$  into voting for  $S$ .
- The total payment promise will be at least  $G^S$ .
- The analysis shows that two subcases need to be considered:
  - ▶ The coalition  $\mathcal{C}^R/\underline{\mathcal{C}}^R$  can afford to pay  $G^S$  to preempt the bribing from taking place without reverting the natural order to *ex ante* intensities.
  - ▶ The coalition  $\mathcal{C}^R/\underline{\mathcal{C}}^R$  cannot afford to pay  $G^S$  without reversing the natural order to *ex ante* intensities.

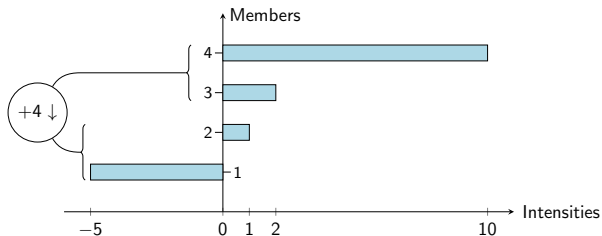
### Example 3: $|\mathcal{C}^R| \geq \kappa$ and positive but small $G^S$



- Committee with 4 members, intensities  $\mathbf{u} = (-5, 1, 2, 10)$  and majority  $\kappa = 3$ . We have  $U^R = 13$ ,  $U^S = 5$ ,  $\underline{U}^R = 1$  and  $G^S = 4$
- All equilibria require the coalition  $\{3, 4\}$  to promise 4 to the members of the coalition  $\{1, 2\}$  without reversing the *ex ante* inter coalition ranking of intensities.
- All equilibria have  $\mathcal{T}_r = 4$



### Example 3: $|C^R| \geq \kappa$ and positive but small $G^S$



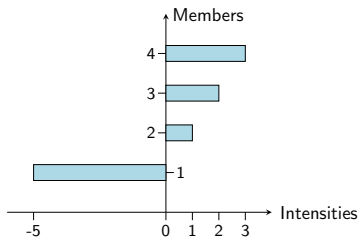
- *Ex ante* intensities are  $\mathbf{u} = (-5, 1, 2, 10)$
- Indeterminacy occurs again:

$$\begin{aligned} \mathbf{r} &= (3, 1, 0, -4), & \mathbf{v}^r &= (-2, 2, 2, 6); \\ \mathbf{r} &= (4, 0, -1, -3), & \mathbf{v}^r &= (-1, 1, 1, 7); \end{aligned}$$

- The following  $\mathbf{r}$  is not an equilibrium, although its total payment is \$4:

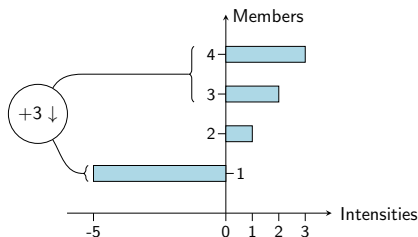
$$\mathbf{r} = (2, 2, -1, -3), \quad \mathbf{v}^r = (-3, 3, 1, 7).$$

## Example 4: $|C^R| \geq \kappa$ and large $G^S > 0$



- Committee with 4 members, intensities  $\mathbf{u} = (-5, 1, 2, 3)$  and majority  $\kappa = 3$ . We have  $U^R = 6$ ,  $U^S = 5$ ,  $\underline{U}^R = 1$  and  $G^S = 4$
- If the members of the coalition  $\{3, 4\}$  promise 4 to the members of the coalition  $\{1, 2\}$  the *ex ante* inter coalition ranking of intensities cannot be preserved by the *ex post* intensities.
- For example  $\mathbf{r} = (4, 0, -2, -2)$  lead to the it ex post intensities  $\mathbf{v}^r = (-1, 1, 0, 1)$ : Member 2 becomes a new target of enticement by member 1.

## Example 4: $|C^R| \geq \kappa$ and large $G^S > 0$



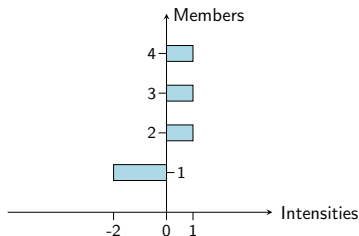
- Committee with 4 members, intensities  $\mathbf{u} = (-5, 1, 2, 3)$  and majority  $\kappa = 3$ .
- To achieve an equilibrium the following algorithm need to be performed:
- **Step 1:** Member 3 and 4 need to promise just enough to align their intensities with that of member 1

$$\mathbf{r}^{[1]} = (3, 0, -1, -2).$$

- New intensities become

$$\mathbf{u}^{[1]} = (-2, 1, 1, 1).$$

## Example 4: $|C^R| \geq \kappa$ and large $G^S > 0$



- New intensities are

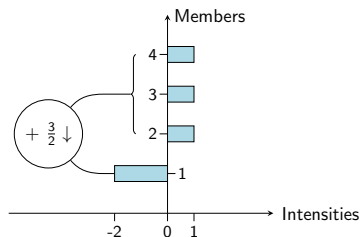
$$\mathbf{u}^{[1]} = (-2, 1, 1, 1).$$

- Gains from trade is  $G^{[1]} = 1$

$$\mathbf{u}^{[1]} = (-2, 1, 1, 1).$$

- Members of the coalition  $\{2, 3, 4\}$  need to promise the same amount otherwise whoever pays more becomes a new target of enticement

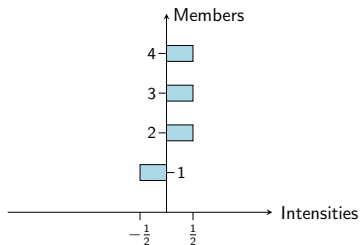
## Example 4: $|C^R| \geq \kappa$ and large $G^S > 0$



- Each member of the coalition  $\{2, 3, 4\}$  promises 0.5 to member 1
- The total payment promises after the two rounds is

$$\mathcal{T}_r = 3 + 3/2 = 9/2 > G^S = 4$$

Example 4:  $|C^R| \geq \kappa$  and large  $G^S > 0$



# Conclusion

- We consider a voting model where voters can freely make promises contingent on vote outcome and prior to voting in order to influence the vote of those who receive the promises.
- The promises are decentralized, enforceable and, are only guided by self interest
- Median voter theorem does not hold because the policy set is multidimensional: The political equilibrium is based on stability and total promises minimization.
- We find, that equilibria exist, are indeterminate but satisfy some general properties:
  - ▶ Push toward equality: Top-down flow of payment.
  - ▶ When the reform is defeated in the absence of promises: Frustrated minority coalition compensates a majority coalition to sway their vote in favour of the reform.
  - ▶ When the reform is enacted in the absence of promises: Trading may be needed to preempt the emergence of frustrated minorities