Can Vote Payments Defend DAOs?

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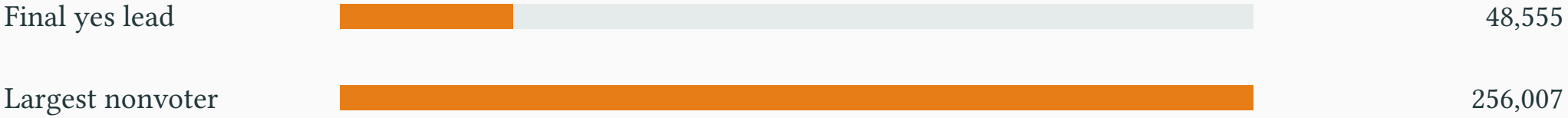
A contested proposal and unused power

Compound Proposal 289 passed in 2024 and was later canceled.



The nonvoter had enough snapshot voting power to erase the lead. We do not know how they would have voted.

Sources: Proposal 289 resolution data audit.

Can vote payments defend a DAO?

An attacker

pays voters to support a proposal.

A defender

pays voters to oppose the proposal.

Payments may mobilize unused voting power. They may also make an attack cheaper or cause existing opponents to stop voting.

Question: When will a defense actually be funded?

One vote with costly participation

Voter i has voting weight w_i, value $u_i \sim F_i$ for passage, and voting cost k_i.

- $u_i < 0$ means the voter prefers rejection.
- Voters choose yes, no, or abstain. Voting costs k_i; abstention is free.
- Yes must outweigh no. Ties reject. There is no quorum.

$$\text{Utility} = u_i \mathbf{1}_{\{\text{pass}\}} - k_i \mathbf{1}_{\{\text{vote}\}} + \text{receipts} - \text{payments}.$$

Values are independent with public distributions. We focus on outcomes with a positive-weight ballot from a voter who neither offers nor accepts payments.

The market and its timing

1. Values

Each voter privately learns their value.

2. Offers

Voters commit offers simultaneously.

3. Ballots

Offers are public; voters vote simultaneously.

Offers are additive, escrowed within public budgets, and paid only for the specified yes or no ballot. Voters cannot pay themselves or fund offers with future receipts.

Voting-stage BNE: take offers as fixed.
Full-game PBE: offers must also be optimal given beliefs.

When will an opponent vote?

An opponent expects loss $L_i = -u_i \geq 0$ if the proposal passes. Let π_i be the chance that voting no changes passage to rejection, compared with abstaining.

$$d_i + L_i \pi_i \geq k_i$$

Here d_i is the total payment offered for a no ballot.

- Larger payments or greater pivotality can make voting worthwhile.
- No must also be at least as attractive as a paid yes vote.

Compare Louis-Sidois and Musolff (2024) on pivotality and vote buying.

Recruiting can crowd out opposition

An offer can make another opponent's vote less likely to matter.



In the example, a whale offers a smaller voter a payment for no, then abstains in one voting-stage equilibrium.

The original protective equilibrium also remains. This is a **fixed-offer example**, not a full-market equilibrium result.

A coalition can resist competing offers

Suppose defender j knows a set S of opponents whose total weight $W(S)$ exceeds half of all voting weight W.

Let H_j be the sum of all **other** voters' offer budgets. Offer each $i \in S$ slightly more than

$$\max\{k_i, \frac{H_j w_i}{W(S) - \frac{W}{2}}\}.$$

- No recruit abstains.
- A successful attack must buy enough of S to exceed budget H_j.

The set excludes the defender. Each recruit must oppose passage for every possible type.

A bound in every full-game equilibrium

Let C_j be the infimum cost of the preceding construction, minimized over eligible coalitions. If $B_j > C_j$, then

$$\Pr(\text{pass} \mid u_j = -L_j) \leq \frac{C_j + H_j}{L_j}.$$

This holds in **every PBE**, for almost every type of the defender.

- A larger loss L_j makes the bound smaller.
- The H_j term accounts for receipts the defender could lose by deviating.

The bound may exceed 1 and assumes an equilibrium exists. In complete-information pure equilibrium, passage is impossible when $L_j > C_j + H_j$.

Who pays for the defense?

We characterize a **restricted benchmark**: complete information, neutral recipients, fixed outside ballots, and funders who abstain. Recipients have no offer budget and break ties in favor of no.

Let P_j be defender j's payment and K_j its cheapest defense when other offers stay fixed. A rejecting profile is a pure equilibrium exactly when:

1. Every defender pays $P_j = K_j \leq L_j$.
2. Attackers pay zero and have no affordable, profitable winning deviation.

Positive contributors are funding-pivotal. This benchmark does not characterize equilibria of the unrestricted market.

Which voters are worth recruiting?

Suppose the yes side leads by D after removing one defender's offers. Let c_i be the extra payment needed to secure voter i.

$$K_j = \min_{S:\sum_{i\in S} g_i \geq D} \sum_{i\in S} c_i.$$

Abstain to no

Margin gain $g_i = w_i$

Yes to no

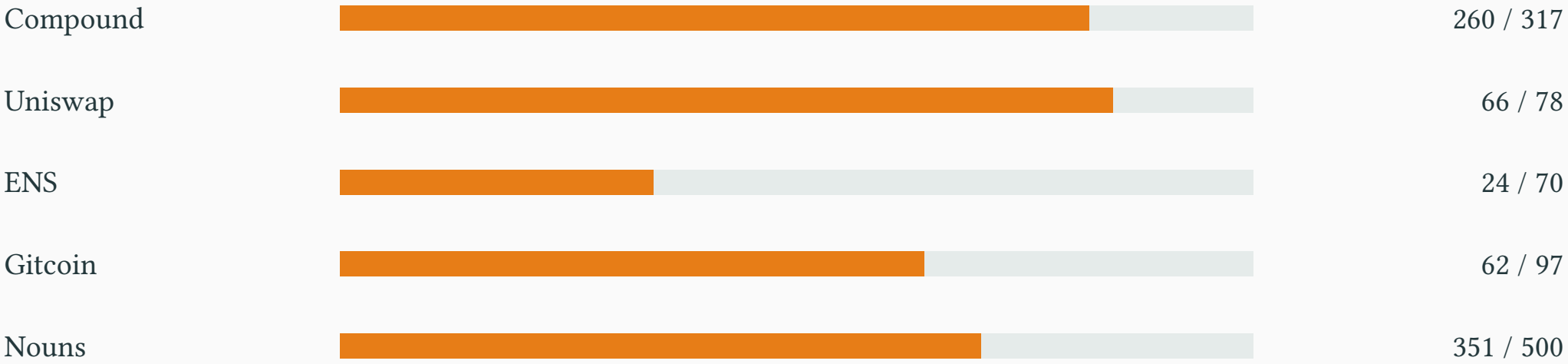
Margin gain $g_i = 2w_i$

Recruitment is weakly NP-hard with binary-encoded weights. For integer gains, a pseudo-polynomial construction reduces it to weighted matching.

How much unused power was there?

In **1,146 of 1,500** proposals, voting-power turnout exceeded address turnout.

In **763 of 1,062** passing proposals, up to ten large accounts that had not voted by the midpoint and never voted could have erased the yes lead:



Retrospective replay with other ballots fixed and full compliance assumed. Data audit.

Could a defense be funded?

For one snapshot from each DAO, consider a hypothetical treasury loss $T = 1,000$ ETH and an attacker with a 1 ETH offer budget. Assign loss $\hat{L}_i = Ts_i$, where s_i is the share of tokens owned.

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fundable with each defender capped by estimated loss and 10% of ETH/WETH.

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fundable if defenders can pay up to estimated loss regardless of balances.

Coordinated funding against the assumed attacker budget; no-code payers and recruits. Values and financing are scenarios, and the result does not establish an equilibrium. Nouns is inconclusive.

What the evidence does not show

- The five DAOs were selected for data coverage. Nouns supplies over half of the proposals.
- Voting power, owned tokens, private losses, and liquid funds are different.
- Replays do not reveal whether voters would accept an offer.
- The model has one simultaneous round and omits repeated counteroffers and payments for abstaining. We have no general equilibrium-existence result.

Observed voting capacity is not evidence that a defensive market forms.

Should DAOs allow vote buying?

The evidence is not yet enough to recommend a general vote-buying market.

Defensive payments can protect a coalition under explicit conditions. The same payment mechanism can also help an attacker.

Direction-neutral reimbursement can mobilize both sides. Timelocks and vetoes are other possible safeguards. Our model does not compare these alternatives.

Transparency may help scrutiny, but off-chain or concealed offers remain possible. A rule alone need not prevent them.

References and data

- Compound Proposal 289 and resolution.
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- This work: paper, data audit, and funding sensitivity.