Is There Wisdom Among the DAO Crowd? Evidence from Vote Delegation*

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Abstract

We evaluate the efficacy of the vote delegation scheme in decentralized autonomous organizations (DAOs) by examining token holders' delegation decisions and delegates' voting behavior in MakerDAO, a pioneering DAO protocol. We find that token holders reward delegates who vote correctly to enhance MakerDAO's value by granting them additional delegated votes. Delegates with more aligned interest with token holders and greater expertise are more likely to vote correctly, whereas delegates with potential conflicts of interest tend to vote against token holders' interest. Finally, the effectiveness of the vote delegation scheme is positively related to MakerDAO's future token returns and economic activity.

Keywords: Decentralized Autonomous Organizations; Vote Delegation; Incentive Alignment; Conflicts of Interest; Voting Choices

JEL classification: G34, O3, G32

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1. INTRODUCTION

Decentralized Autonomous Organization (DAO) is an innovative approach to exercising corporate governance on the blockchain. It allows stakeholders who hold governance tokens to directly participate in proposal voting, influencing the organization's operations. DAO differs from traditional centralized governance in two fundamental aspects. First, in centralized governance, shareholders elect board members who then appoint a CEO. In contrast, the term "decentralized" indicates that nearly all decisions, from operational to financial, are made directly by active token holders. Second, "autonomous" indicates that the governance process is enforced without external forces, such as regulations or third-party monitoring. Instead, this process is programmed into and executed via smart contracts, enhancing information transparency.[1] This setup ensures voting choices are immutable and publicly visible, eliminating vote manipulation and enhancing monitoring.

Despite its advantages, decentralized autonomous governance is often hindered by inefficiencies. As emphasized by Makarov and Schoar (2022), the lack of supervisory safeguards in decentralized finance (DeFi) increases the risks of conflicts of interest and coordination failures among key participants. In DAOs, small and unsophisticated token holders may lack the time and knowledge to cast informed votes that enhance firm value, while some token holders may engage in free riding by relying on others' decisions (Ferreira and Li, 2025). To address these challenges, many DAOs have established vote delegation schemes that allow token holders to delegate their voting power to designated members, known as delegates. This mechanism enables token holders to participate in governance without voting on every proposal directly. Empirical evidence suggests that vote delegation is widespread in DAOs. For instance, Appel and Grennan (2024) find that 45% of the DAOs in their sample incorporate some form of vote delegation. However, the effectiveness of these schemes remains an open question, because there is no regulatory oversight

[1] A smart contract is an automated, self-executing contract with terms directly written into code, executing, and enforcing the agreement upon pre-defined conditions on a blockchain network. The blockchain's decentralized ledger ensures transparency by allowing all participants to view contract and transaction details. Also, its cryptographic security renders the contract immutable, preventing alterations once deployed.

for delegates in DAOs to safeguard against potential negligence or conflicts of interest. Therefore, the extent to which delegates serve the best interest of token holders is unknown.

The vote delegation scheme in DAOs bears some similarities to a recent development in the asset management industry. As highlighted in Malenko and Malenko's (2024) theoretical study, the rapid growth of "pass-through voting", a mechanism enabling mutual fund investors to choose between delegating their votes to fund managers or casting the votes themselves, could significantly reshape investor voting choices and corporate governance.[2] Currently, empirical research on mutual fund investors' delegation decisions is severely hampered by the lack of detailed investor- and delegate-level data. Thus, examining the behavior of token holders and delegates in DAOs provides a valuable avenue to gain insights into the working and optimal design of delegation mechanisms in general.

In this paper, we provide the first evidence on the efficacy of the vote delegation scheme by examining the delegation decisions of token holders and the voting behavior of delegates. Specifically, we focus on four important questions regarding vote delegation in decentralized governance. First, do token holders reward delegates who cast "correct votes" by increasing delegated voting power, and conversely, penalize those who cast "wrong votes" by withdrawing voting power? Second, how are delegates' voting decisions related to their incentives and expertise? Third, is the efficacy of the vote delegation scheme associated with future growth and performance of DAOs? Fourth, what factors drive token holders' decisions to delegate their votes or vote on their own? Ex ante, the answers to these questions are unclear, as the very reasons that prompt the introduction of vote delegation – namely, token holders' lack of sophistication and the absence of regulatory and monitoring forces – could also hinder the scheme's effectiveness.

We examine these questions using a sample of proposal voting in MakerDAO over the

[2] BlackRock announced the "Voting Choice" program in October 2021, which gives its investors the option to either delegate their votes to BlackRock or vote directly themselves. Other major asset management companies have also introduced similar programs, such as Vanguard's "Proxy Voting Choice" program and State Street's "Investor Choice" program. Fidelity has also indicated interest and conducted internal reviews for implementing pass-through voting programs.

period from October 2021 to March 2025.[3] MakerDAO is a foundational DeFi platform built on the Ethereum blockchain that operates as a crypto bank. It has introduced two cryptocurrencies: DAI, its stablecoin product pegged to the U.S. dollar, and MKR, which can be considered its governance token, analogous to a company's stock.[4] Like a traditional bank that lends out fiat currency, MakerDAO issues loans in DAI and generates revenue through the interest charged on these loans. MKR holders can vote on proposals covering topics such as new product design, budgeting, and staffing.

In our first analysis, we examine changes in the number of MKR tokens delegated to a delegate in the month after voting on a proposal (or proposals). MakerDAO compensates delegates based on the number of delegated votes they receive and the extent of their participation and communication in proposal voting. Therefore, MKR token holders' ability to reallocate their delegations after votes, along with the competition among delegates, can provide external incentives for delegates to gather information, evaluate proposals, and cast informed votes. We find that delegates who cast a higher percentage of correct votes receive more delegation and experience higher growth of delegated votes, where a vote is defined as correct if it supports (opposes) a proposal that significantly increases (decreases) the value of MakerDAO. All else being equal, a one-standard-deviation increase in vote correctness is associated with a 1.3 percentage-point increase in the probability of receiving more delegation and a 1.2 percentage-point increase in delegated votes growth, which corresponds to a 37% increase relative to the sample mean. Since the number of delegated MKR votes is a primary driver of delegate compensation, this improvement in vote correctness over a given month translates into an annual compensation increase of approximately $2,832 for the average delegate in our sample. These results indicate that token holders, through their delegation decisions, can incentivize delegates to vote in the token holders' best interests.

[3] We start the sample period from October 2021, the beginning of the compensated delegation scheme in MakerDAO.
[4] Stablecoins are a category of cryptocurrencies that aim to offer price stability and are typically pegged to a stable reserve asset, like the US Dollar. DAI is an algorithmic stablecoin, which relies on on-chain algorithms and smart contracts to manage its supply according to market conditions.

Next, we explore the determinants of delegates' proposal voting decisions, focusing on delegates' incentive alignment (or misalignment) with MKR holders and their expertise regarding the underlying issues in each proposal. We find that delegates with larger MKR holdings in their own investment portfolios are more likely to cast correct votes on proposals. We also examine delegate holdings of other tokens and distinguish them based on whether their interests align or conflict with MKR. We find that delegates with larger holdings of MKR-conflicted tokens are more likely to cast incorrect votes. We note that our analysis likely underestimates the extent of conflicts of interest arising from delegate holdings of MKR-conflicted tokens, because delegates may conceal some of these positions by using unobserved addresses. These results highlight the role of incentive alignment in driving delegates' voting decisions and the importance of considering delegates' holdings in not only MKR but also other related tokens.

Regarding delegate expertise, our analysis shows that delegates are more likely to vote correctly on a proposal if they have previously invested in a greater proportion of tokens mentioned in the proposal's discussion forum, or have held larger positions in these tokens. We obtain similar results when measuring delegate expertise by their past voting correctness in proposals addressing similar topic tags. Additionally, we find that delegates with expertise are generally inclined to vote earlier, rather than free-riding on the choices of other voters.

We further assess whether the effectiveness of the vote delegation scheme is associated with MakerDAO's future performance and growth. We find that the aggregate percentage of correct votes cast by delegates each week is significantly and positively associated with future abnormal returns of MKR tokens and the growth of Total Value Locked (TVL), which measures MakerDAO's economy activity. Additionally, both voter participation and decentralization increase following the implementation of the delegation scheme. These findings suggest that a well-functioning vote delegation scheme, in which delegates make decisions aligned with MKR holders' interests, can contribute positively to platform growth.

In our final analysis, we examine the relationship between token holders' heterogeneous preferences and their delegation decisions. Malenko and Malenko (2024) show theoretically that, under pass-through voting, shareholders with heterogeneous preferences are more inclined to vote

independently when their preferences differ significantly from those of available delegates. Consistent with this prediction, we find that token holders with larger holdings of conflicted tokens (i.e., stronger idiosyncratic preferences) are more likely to vote directly rather than delegating their votes. Conversely, token holders with larger MKR holdings (weaker idiosyncratic preferences) are more inclined to delegate. These findings underscore the critical role of preference heterogeneity in shaping investor voting choices.

Our paper makes several key contributions to the growing literature on DAO governance. To the best of our knowledge, we are the first to conduct a comprehensive empirical analysis of DAO delegation systems. While several papers provide valuable descriptive analysis of DAO characteristics and classifications (Appel and Grennan, 2024; Ding et al., 2023; Puschmann and Huang-Sui, 2023; Han, Lee, Li, 2025), exactly how specific governance mechanisms – such as vote delegation – function and whether they relate to DAO outcomes is not well understood. Appel and Grennan (2024) document a positive relationship between vote delegation and governance token returns during a proposal's voting period. They consider vote delegation as an inclusive governance feature that encourages token holder participation in DAO decision making. This interpretation hinges on a key assumption that delegates act in the best interest of token holders. We provide direct evidence on this assumption by demonstrating that even in a prominent decentralized organization like MakerDAO, there are important variations across delegates in their expertise and incentive alignment with token holders and these variations influence the delegates' voting decisions. Furthermore, we find that the extent to which the delegates act in token holders' best interests is positively associated with the token's future performance. Overall, our study expands the understanding of a crucial design feature of decentralized governance.

A significant body of research examines ownership concentration and voting dynamics in DAOs (Casella and Macé, 2021; Fritsch et al., 2022; Sun et al., 2022; Cong et al., 2025). Han, Lee, and Li (2023) construct a theoretical framework analyzing conflicts of interest between large token holders and small participants, showing that ownership concentration can hinder platform growth. Ferreira and Li (2025) develop a model highlighting the trilemma between efficiency, autonomy, and decentralization. In contrast, our paper shifts the focus to the efficacy of decentralized

delegation systems in DAOs. We empirically demonstrate that a well-functioning decentralized delegation system can contribute positively to platform growth. Additionally, we provide evidence on conflicts of interest between voting delegates and token holders, informing the current discourse on DAO governance.

Our study also contributes to the literature on blockchain-based governance. Previous research has extensively discussed consensus algorithms in public blockchains (Fanti, Kogan and Viswanath, 2019; Fanti et al., 2019; Saleh, 2021; Cong, He, and Tang, 2022; Jermann, 2023, 2024) and has shown how blockchain reshapes collaboration and coordination between parties (e.g., Yermack, 2017; Lumineau, Wang, and Schilke, 2021; Chen et al., 2023; Cong and He, 2019; Budish and Sunderam, 2024; Lee et al., 2024). Additionally, several theoretical studies explore how token-based governance impacts platform financing, data generation, and growth (Bena and Zhang, 2023; Jermann and Xiang, 2024; Cong, Li, and Wang, 2021). Our paper complements this literature by offering empirical insights into how the delegation system in DAO governance influences overall platform efficacy.

Finally, our findings provide novel insight into the evolving landscape of voter choices driven by the recent trend of "pass-through voting", in which fund managers offer investors the option to reclaim their voting rights. While this practice aims to democratize voting, it presents challenges such as inefficient delegation and coordination failures (Malenko and Malenko, 2024). Brav, Li, Lund, and Pan (2025) also point out the difficulties and incentive problems facing the parties involved in current voting choice programs, namely, investors, asset managers, and proxy advisors. Our paper leverages the transparency of blockchain-based governance in DAOs, utilizing the granular data on both investors' and delegates' decisions – data that are typically difficult to obtain in traditional mutual fund settings. Our findings suggest that vote delegation can serve as an effective governance mechanism when delegates have the right incentives and expertise to vote in the best interest of investors. MakerDAO's approach to compensating and incentivizing

delegates offers a potential alternative to the flat-fee structure that asset managers typically use to compensate proxy advisors for designing investor voting menus.[5]

2.INSTITUTIONAL BACKGROUND

2.1 MakerDAO Business Model

MakerDAO is a leading DeFi company operating on the Ethereum blockchain, generating revenue by issuing crypto loans. As one of the most promising DeFi projects, its market capitalization surpassed $1.5 billion in September 2025. MakerDAO has introduced two cryptocurrencies: DAI, a stablecoin pegged to the U.S. dollar by a one-to-one ratio, and MKR, which serves as its governance token or 'stock'.

Similar to a traditional bank lending fiat currency, MakerDAO issues loans in DAI and generates revenue from interest payments. To borrow DAI, borrowers are required to lock collateral, typically Ethereum (ETH), in a smart contract. To mitigate market volatility and potential depreciation of the collateral, MakerDAO often enforces overcollateralization. For instance, a loan of 1 DAI might be backed by ETH valued at 1.5 DAI. The interest charged on these loans, referred to as the "stability fee", is also paid using DAI.

MKR functions similarly to corporate shares, serving two distinct roles within the MakerDAO ecosystem. First, MKR tokens provide voting rights, with each token equating to one vote. This allows holders to directly participate in MakerDAO's operational and policy decisions. Second, MKR tokens represent cash flow claims: token holders share the profits generated from interest accrued on DAI loans.

2.2 MakerDAO Governance Scheme

Diverging from traditional corporate governance model where decision-making authority is concentrated in the CEO and board of directors, MakerDAO adopts a more democratic approach. All MKR holders are invited to participate in the governance process. As illustrated in Figure 1, the governance process begins with an open forum discussion, where any individual holding MKR

[5] Brav et al. (2025) argue that, among other issues, the prevailing fee structure fails to incentivize proxy advisors to design voting choice programs that increase investor participation or advance investors' best interests.

tokens or having a vested interest in the MakerDAO ecosystem can submit and discuss proposals. These proposals cover a wide range of topics, from new collateral inclusion to budgetary considerations. By facilitating open discussions, MakerDAO stakeholders can obtain insights from both internal and external parties, leveraging the collective knowledge of a diverse user base.

Each week, MakerDAO employees ("facilitators") compile proposals that have generated significant interest and undergone thorough discussion. These proposals are then advanced to the poll voting stage, where they are formally displayed on the governance portal. Voting on new proposals begins every Monday at 4 PM UTC, with most polls concluding within three days. However, particularly important proposals could last for seven or fourteen days. All relevant materials and discussions about each proposal are carefully organized on the website, ensuring that voters can easily access and understand the information. The voting interface on the official website also includes a voting button for convenience. To help voters prioritize their attention and efforts, proposals are typically labeled as high, medium, or low impact, and each is tagged with relevant topic labels.[6] Participation in poll voting is exclusively restricted to MKR holders and delegates who have been entrusted with voting rights by ordinary holders. Once proposals passed the poll vote, they will proceed to an executive vote to determine their detailed implementation. Figure IA.1 in Internet Appendix illustrates the MakerDAO governance process as displayed on the web interface.

2.3 The Delegation Framework

Acknowledging that not all MKR holders have the time or expertise to actively participate in every vote, MakerDAO introduced a delegation system in October 2021. As shown in Figure 2, the process begins with a prospective delegate establishing a delegation contract using a standardized smart contract format designed by MakerDAO. Upon successful execution of this contract, the delegate's agreement is displayed on the official MakerDAO voting website. Each delegation contract has a term of one year. When delegation contracts expire, delegates wishing to

[6] Figure IA.2 in Internet Appendix shows voting participation across the major topic tags for our sample proposals. Proposals with the highest voter participation often involve risk parameters, such as changes to the stability fee.

continue must create new contracts and attract token holders to delegate their voting rights under the new contracts.

MKR holders who wish to delegate their voting power can lock their MKR tokens with a chosen delegate, who then votes on their behalf in proposal polls. If MKR holders lose confidence in their delegate at any point during the contract period, they can terminate the delegation by unlocking their MKR tokens from the contract. The entire delegation process, including contract creation and interactions between delegates and MKR holders, is fully transparent and publicly recorded on the blockchain.[7] Any individual or institution can become a delegate. On average, MakerDAO has around 19 delegates that actively participate in voting. The flexibility of MKR holders to switch delegation, combined with the competition among delegates to earn MKR holders' trust, incentivizes delegates to build expertise and dedicate significant effort to informed decision-making.

There are two types of delegates within MakerDAO: recognized delegates and shadow delegates. Recognized delegates are required to publicly disclose their identity, potential conflicts of interest, social media profiles, and introductory videos. Additionally, recognized delegates are eligible to receive compensation from MakerDAO's system reserves. The compensation is determined by two factors: the number of delegated MKR tokens they manage and their level of participation in voting and forum discussions. Equation (1) presents the formula used to calculate their monthly compensation.

$$Recognized\ Delegate\ Compensation = \left[C * \min\left(1, \frac{MKR^q}{T^q}\right)\right] * M \qquad (1)$$

where C represents the maximum monthly compensation of \$12,000. MKR is the number of MKR tokens managed by the delegate at the end of each month; T is a threshold set at 10,000 MKR, and q is an exponential factor set at 0.5. Therefore, compensation increases with the number of MKR tokens managed by the delegate. The parameters T and q are specifically designed to skew compensation in favor of smaller delegates, thereby incentivizing the inclusion and recruitment of new participants into the governance system.

[7] A delegate's history remains publicly accessible even after the delegation contract expires.

M is an adjustment factor determined by a performance modifier, *P*, which measures the delegate's voting participation and communication. Specifically, *P* = min (*participation, communication),* where *participation* is the percentage of polls in which the delegate participated in the previous 120 days, and *communication* measures the extent to which the delegate discloses voting decisions and provides reasoning for those decisions during the same 120-day period.[8] For example, a communication score of 100% would indicate the delegate disclosed all voting decisions *and* provided reasons for each decision over the previous 120 days. Conversely, a communication score of 50% would indicate the delegate disclosed all voting decisions but provided no reasoning for those decisions. If *P* is below 75%, then *M* equals zero, resulting in no compensation for the delegate. If *P* is between 75% and 90%, *M* gradually increases from 40% to 100% as *P* reaches 90%. Once P reaches or exceeds 90%, *M* is set to 100%.

Unlike recognized delegates, shadow delegates remain anonymous and do not receive monetary compensation. Despite the absence of financial incentives, shadow delegates are motivated to attract MKR delegations to accumulate voting power and influence proposal outcomes in alignment with their interests. The MakerDAO delegation structure promotes diverse participation by accommodating various preferences and strategies from groups with differing priorities and objectives.

3. DATA AND VARIABLE CONSTRUCTIONS

3.1 Data and Sample

We collect proposal voting data from MakerDAO over the period from October 2021, which marks the introduction of the compensated delegation scheme, to March 2025. The data are sourced from MakerDAO's official websites and include on-chain information on proposals, voting records, delegation history, and forum discussions. Proposal information includes titles, descriptions, voting durations, and outcomes. In this study, we focus exclusively on binary-choice proposals (i.e., Yes or No), excluding ranked-choice polls where voters rank multiple options. Additionally, we require proposals to be classifiable as either value-enhancing or value-destroying

[8] For a new delegate with less than 120 days of history, the evaluation period begins from the start of their delegation.

based on our classification approach described in Section 3.2. After applying these criteria, about 16% of proposals are excluded from the sample. Voting records contain voter addresses (either ordinary MKR voters' account addresses or delegates' delegation contract addresses), voting timestamps, poll identifiers, and vote choices. We focus on definitive votes, excluding 'Abstain' votes, which account for 6% of total votes. Our final sample consists of 453 proposals and 14,195 voting participation records, representing votes cast by 970 ordinary MKR holders and 218 delegates.[9]

The delegation history data include delegation contract addresses, delegate account addresses (which deploy these contracts), addresses of MKR holders granting voting power to the delegates, and details of delegation record changes, such as timestamp and the number of delegated tokens. Since the inception of the delegation scheme, 307 delegation contracts have been established: 212 by shadow delegates and 95 by recognized delegates (not all of whom participate in proposal voting). We exclude cases in which delegates grant their own MKR tokens to themselves, which are identified if the account address deploying the delegation contract matches the delegating MKR holder's address. This leaves us with 1,781 records of delegation activities: 1,012 delegation increases (i.e., MKR holders joining a delegate or adding more tokens to an existing delegate) and 769 delegation withdrawals (i.e., MKR holders leaving a delegate or transfer some of their tokens away from an existing delegate). Recognized delegates account for a large majority of delegation activities, representing 870 (86%) of delegation increases and 670 (87%) of delegation withdrawals. In contrast, shadow delegates account for 142 (14%) and 99 (13%) of these activities, respectively. This distribution reflects the reality that recognized delegates tend to attract more delegation than shadow delegates because they are more visible, easier to monitor by MKR holders, and face higher reputational costs.

The forum discussion data include proposal titles, detailed descriptions, and discussants' posts within each thread. For each post, we record the discussant's nickname, the number of likes received, and any cited or referenced content. Since MakerDAO provides information about

[9] About 30% of these delegates are recognized delegates, and the remainder are shadow delegates.

delegates' interactions within the forum, we can link forum discussants' nicknames to their corresponding delegates.

To examine delegates' expertise in specific tokens and identify potential conflicts of interest, we obtain data on MakerDAO delegates' token holdings from Etherscan. Etherscan is a blockchain explorer and analytics platform that provides detailed records of transactions, balances, and smart contract executions within the Ethereum network, covering activities and token holdings both within and outside the MakerDAO platform. We focus on token holdings associated with the account addresses delegates use to deploy their delegation contracts, as well as other public accounts linked to their ENS (Ethereum Name Service) names.[10] It is important to note that tracking token holdings in concealed accounts that delegates choose not to disclose, as well as their holdings on other blockchains such as Bitcoin, remains a significant challenge.

To assess market reactions for MKR and other tokens, we obtain daily token prices from CoinMarketCap, a leading platform for cryptocurrency price information. To calculate the abnormal returns of each token, we adopt the cryptocurrency factor model proposed by Liu, Tsyvinski, and Wu (2022). The Crypto-CAPM model constructs a daily cryptocurrency market return index (CMKT) by value-weighting the returns of all tokens with market capitalizations exceeding $1 million. Using the CMKT factor, we calculate each token's daily abnormal return, enabling us to evaluate its price response to each proposal.

3.2 Classifications of 'Correct' Votes

For our analysis, it is crucial to determine whether a delegate votes correctly on a proposal, i.e., voting in favor of a value-enhancing proposal or against a value-destroying proposal. We take two steps to classify votes as correct. First, we categorize each proposal as either value-enhancing or value-destroying based on the market response of MKR on the pivotal voting date. Second, we examine whether the delegate's vote aligns with this classification.

[10] ENS is a decentralized naming system built on the Ethereum blockchain. It is designed to map human-readable names, like 'monetsupply.eth', to Ethereum addresses. This system allows us to identify other accounts linked to a delegate, as a single ENS name can be mapped to multiple Ethereum addresses, one of which is typically the delegate' address disclosed on MakerDAO.

The pivotal vote date for a proposal is defined as the day when: 1) The MKR tokens voted for a decision ('Yes' or 'No') reach at least 50% of the expected total votes, where the expected total votes are calculated as the average MKR tokens involved in proposals from the previous month; 2) The MKR tokens voted for that decision on the date exceed 10% of the expected total votes. These two conditions are designed to identify significant voting events that determine the outcome of a proposal.

We focus on market responses on the pivotal vote date rather than the voting's closing date for two reasons. First, voting results are publicly visible in real time and the outcomes are often determined before the final voting date. Therefore, meaningful market reactions may occur prior to the conclusion of voting. Second, multiple proposals often conclude simultaneously within the same week, causing market reactions on the closing date to reflect aggregate outcomes rather than the impact of individual proposals. Note that a pivotal vote date may be unavailable for certain proposals if neither side exceeds 50% of expected total votes, or if incremental votes on that date fail to meet Condition (2).[11]

To illustrate the definition of pivotal vote date, consider Poll 665, which takes place from November 1 to November 4, 2021, with a total participation of 54,365 MKR tokens. By the end of the poll, 34,315 MKR tokens (63%) vote in favor, while 20,050 MKR tokens (37%) oppose the proposal. The average participation in proposal voting during the previous one month is 67,043 MKR tokens (expected votes). To meet the 50% threshold specified in Condition (1), one side must accumulate at least 33,521.5 MKR tokens. Figure 3 plots the cumulative voting tokens throughout the voting period and shows that the threshold is achieved by the "Yes" votes on November 3, 2021. Additionally, on the same day, the incremental MKR tokens voted for the "Yes" decision amount to 15.5% of the expected votes, satisfying Condition (2), which requires that the MKR tokens voted for that decision on the pivotal vote date exceed 10% of the expected total votes. Therefore, November 3, 2021 is identified as the pivotal vote date for Poll 665.

[11] Forty-nine proposals do not meet these two conditions and therefore are not included in our sample.

Next, we examine the abnormal return of MKR on the proposal's pivotal vote date. The daily abnormal return is estimated based on the Crypto-CAPM model:

$$r_{i,t} - r_{f,t} = \alpha_i + \beta_i CMKT_t + \epsilon_{i,t} \quad (2)$$

where *CMKT* is the value-weighted average return of cryptocurrencies listed on CoinMarketCap with a market capitalization over $1 million (Liu, Tsyvinski, and Wu, 2022). To estimate the model parameters, we use a 180-day estimation window up to day -1 relative to the pivotal vote date. If the abnormal return aligns with the vote direction, i.e., a positive return when 'Yes' votes reach 50% of the expected votes, or a negative return when 'No' votes reach 50% of the expected votes, we classify the proposal as value-enhancing. On the contrary, if the abnormal return contradicts the voting direction, i.e., a positive return when 'No' votes reach 50% of the expected votes, or a negative return when 'Yes' votes reach 50% of the expected votes, we classify the proposal as value-destroying.

In the case of Poll 655, Figure 3 plots the cumulative abnormal returns of MKR during the voting period. On the pivotal vote date (November 3, 2021), the 'Yes' side prevails, and MKR experiences a positive abnormal return of 12.2%. Therefore, we classify the proposal as value-enhancing for MakerDAO.

Next, we define a delegate's vote on a proposal as *correct* if the delegate votes 'Yes' on a value-enhancing proposal or 'No' on a value-destroying proposal. Conversely, a vote is classified as *incorrect* if otherwise. Table 1 provides hypothetical examples illustrating this classification. Since delegates may vote on multiple proposals on the same voting date, we construct an aggregate measure, *Correct Vote*, for each delegate on each vote date.[12] This measure is defined as the proportion of correct votes cast by the delegate out of all the proposals in which they participate on that vote date.

Our approach for classifying proposals as value-enhancing or value-destroying is novel. To bolster the confidence in our approach, we conduct two validity checks: a case study and a text-based sentiment analysis. Details of these validity checks are provided in Internet Appendix

[12] On average, each delegate participates in 2.96 polls on days when they cast a vote on a proposal.

Section II. For the case study, we revisit Poll 665 and find that subsequent developments support our classification of this poll as value-enhancing. For the sentiment analysis, we use the GPT-O3 API to rate the sentiment of individual posts in the discussion forum for each proposal on a 0-1 scale (0=most negative, 0.5=neutral, 1=most positive), and then aggregate the sentiment at the proposal level. For example, the average sentiment score for Poll 665 is 0.67, indicating that it is generally viewed favorably by the discussants as a value-enhancing proposal. We find a correlation of 34% between the proposal-level sentiment score and our classification (where value-enhancing proposals are coded as 1 and value-destroying proposals as 0). This result suggests that discussants' opinions broadly align with our classification approach.

4.EMPIRICAL ANALYSIS

4.1 Do MKR Holders Reward (Punish) Delegates for Correct (Incorrect) Votes?

In this section, we investigate whether MKR holders reward delegates for casting correct votes by increasing their delegated tokens, and conversely, whether they penalize delegates for casting incorrect votes by withdrawing those tokens. We begin with a baseline regression analysis, followed by a series of robustness tests.

4.1.1 Baseline Regression Analysis

We estimate the following regression of future delegation changes on delegates' vote correctness:

$$Delegation\ Change_{d,t+30} = \alpha + \beta\ Correct\ Vote_{d,t} + \gamma' X_{d,t} + \eta_d + \theta_t + \epsilon_{d,t} \quad (3)$$

The sample observations are at the delegate-vote date level, where delegate *d* casts a vote on date *t*. Recognized delegates account for 80% of the observations. The dependent variable, *Delegation Change*$_{d, t+30}$, captures the change in delegation to delegate *d* during the 30-day window following his vote on date *t*.[13] We conduct ordered logit regressions of two ordinal measures that capture the change in delegation. The first measure, *MKR Increase*, is an ordinal variable taking the value of

[13] The 30-day window is selected based on the monthly evaluation cycle of delegates. Additionally, recognized delegates are required to disclose the rationale behind their votes within 7 days after each vote. MKR holders may require additional time to process and respond to their delegates' voting decisions.

1, 2, or 3 if the net change in delegated MKR tokens during the 30-day period following the focal delegate's vote is negative, zero, or positive. The second measure, *Delegator Increase*, follows an analogous construct: it equals 1, 2, or 3 if the net change in the number of MKR holders delegating to the focal delegate after the vote is negative, zero, or positive. We also conduct OLS regressions using a third measure, *Delegate Growth*, defined as the net change in the number of delegated MKR tokens over the 30-day period divided by the delegate's total MKR tokens on the vote date.[14]

The main independent variable, *Correct Vote*, measures the correctness of delegate *d*'s vote on date *t*, defined as the proportion of correct votes cast by delegate *d* across all proposals voted on that date. $X_{d,t}$ represents a vector of delegate and proposal characteristics, including the delegation contract's remaining duration (*Days to Expire*), the number of MKR holders who have delegated voting power to the delegate before the vote date (*Num of Delegators*), the number of proposals that the delegate participates in on the vote date (*Participation*), the number of "High-Impact" proposals that the delegate participates in on the vote date (*Num of High Impact*), the average proportion of tokens voted in proposals that are controlled by the delegate on the vote date (*Voting Power*), and the natural logarithm of one plus the dollar value of the delegate's MKR holdings on the vote date (*MKR Holding Value*). Panel A of Table 2 presents the summary statistics of these variables. To control for unobserved heterogeneity across delegates and time, we include delegate fixed effects (η_d) and year-month fixed effects (θ_t). Standard errors are clustered at the delegate level.

Table 3 presents the regression results. Models (1) to (4) present ordered logit regressions, where the dependent variables are the two ordinal measures, *Delegator Increase* and *MKR Increase*.[15] Models (5) and (6) reports OLS regressions using the continuous measure of *Delegate Growth*. The coefficients on *Correct Vote* are significantly positive in all six models, indicating that MKR holders reward delegates for making correct votes by increasing delegated tokens, or conversely, punish delegates for making incorrect votes by withdrawing delegated tokens. This effect is also economically significant. The results in Model (2) indicate that a one-standard-

[14] We winsorize *Delegate Growth* at the 10th and 90th percentiles to mitigate the impact of outliers.
[15] As shown in Table IA.1 of Internet Appendix, we obtain very similar results from OLS regressions.

deviation increase in *Correct Vote* raises the probability of an increase in delegated tokens over the subsequent 30 days by approximately 1.3 percentage points, representing a 4.2% rise relative to the mean.[16]

When examining monetary incentives, the results in Model (6) using the continuous measure reveals that a one-standard-deviation increase in *Correct Vote* for a delegate is associated with a 1.2 percentage-point increase in the growth rate of delegated tokens over the next 30 days, representing a 37% increase from the mean.[17] Given that the average number of MKR tokens managed per delegate is 6,498, this increase translates to an additional delegation of approximately 81 MKR tokens, resulting in roughly $59 in additional monthly compensation.[18] For a simple calculation, if the delegate votes once a week, this improvement in vote correctness over a given month translates into an annual compensation increase of approximately $2,832 (=59 × 4 × 12).

4.1.2 Robustness Tests

We conduct a battery of sensitivity analyses to ensure the robustness of our baseline results. First, we estimate abnormal MKR returns using a single-factor model based on a DeFi industry index and the cryptocurrency two-factor and three-factor models in Liu, Tsyvinski, and Wu (2022).[19] Second, we expand the event window for measuring abnormal returns to include both the pivotal vote date and the following day. Third, instead of relying on a specific pivotal vote date,

[16] An increase of one unit of *Correct Vote* corresponds to a 2.73% higher probability of a net increase in delegated tokens, a 0.2% lower probability (minimal impact) in the probability of no change in delegation, and a 2.5% lower probability of a net decrease. The 1.3 percentage-point economic effect is computed by multiplying the standard deviation of Correct Vote (46%) by the 2.73% marginal probability increase. It represents a 4.2% rise relative to the baseline probability of a delegation increase (30.2%).

[17] The 1.2 percentage-point increase is calculated as the standard-deviation of *Correct Vote* (46%) times the coefficient of 0.027 in Column (6) of Table 3.

[18] Compared to the average *Delegate Growth* of 3.4%, the additional increase of 1.24% corresponds to an incremental delegation of approximately 6,948 × 1.24% = 81 MKR tokens. According to Equation (1), without considering improvements in voting accuracy, the delegate's monthly payment is calculated as $12{,}000 \times [6{,}948 \times (1 + 3.4\%)/10{,}000]^{0.5} = 9{,}836$. When accounting for the increased voting accuracy, the delegate can receive a higher monthly payment = $12{,}000 \times [(6{,}498 \times (1 + 3.4\%) + 81)/10{,}000]^{0.5} = 9{,}895$. This translates into an additional monthly payment = 9,895 – 9,836 = $59.

[19] DeFi index is a value-weighted average of prices for CoinMarketCap-tagged DeFi tokens with market capitalization exceeding $1 million. The cryptocurrency two-factor model includes the crypto-market factor (CMKT) and the crypto-size factor (CSMB). The cryptocurrency three-factor model further incorporates an additional crypt-momentum factor (CMOM). When constructing the CMOM factor, we follow a three-day momentum strategy.

we measure abnormal returns either during the entire voting period or from the beginning of proposal discussion to the vote's conclusion. Fourth, we measure vote correctness using the delegate's net number of correct votes on a given date, rather than the proportion of correct votes.

Fifth, we repeat our analysis focusing on a subperiod from April 2023 to October 2023, because in April 2023, MakerDAO implements significant governance changes as part of its "Endgame Plan", which aims to further decentralize governance, enhance efficiency, increase resilience, boost voter participation, and ensure long-term sustainability. This reform, discussed in detail in Internet Appendix Section III, brings several key changes to delegate incentives, potentially affecting the effectiveness of MKR holders' monitoring of delegate voting.

Sixth, even if a proposal is value-enhancing, the market reaction might be negative if voting is dominated by a single voter, as the DAO community tends to dislike autocratic governance. To avoid potential misclassifications due to this possibility, we exclude polls where the results are determined by a single voter (whether an ordinary voter or a delegate).

Seventh, our baseline analysis uses the previous one-month voting participation as the benchmark for defining the pivotal vote date to avoid look-ahead bias. Alternatively, we use the actual total votes on a proposal to identify the pivotal vote date.

Eighth, given the high volatility of the cryptocurrency market, the classification of value-enhancing or value-destroying proposals may be less accurate for proposals with small abnormal returns. To mitigate this concern, we exclude proposals with small abnormal event returns. As shown in Internet Appendix Tables IA.2 to IA.9, our baseline results remain intact in all these robustness tests.

Finally, we perform placebo tests using pseudo-pivotal vote dates, which are chosen from the 10 days before and 10 days after the voting period. Only one out of these 20 pseudo-pivotal vote dates produce results similar to those based on the actual pivotal vote date (Table IA.10), suggesting that our findings are unlikely to be driven by random price fluctuations around the voting period.

4.2 Delegate Incentives and Voting Behavior

Our results in the previous section show that MKR holders can incentivize delegates to vote correctly on proposals through an ex-post settling-up mechanism of delegation adjustments. In this section, we examine delegates' ex-ante incentives, specifically those arising from their crypto holdings, and analyze how these incentives influence their voting decisions.

4.2.1 Incentive alignment from MKR token holdings

We begin by examining how delegates' MKR holdings influence their voting decisions. Delegates with larger MKR holdings in their investment portfolios are expected to have stronger interest alignment with their principals (MKR holders), thus increasing the likelihood that they vote correctly. To test this hypothesis, we estimate the following delegate-poll level regression:

$$Correct_{d,p} = \alpha + \beta_1 MKR\ Holding\ Value_{d,p} + \gamma' X_{d,p} + \eta_d + \theta_t + \epsilon_{d,p} \quad (4)$$

where the dependent variable, $Correct_{d,p}$, is a dummy variable that equals one if delegate *d* casts a correct vote on proposal *p*, and zero otherwise. The key independent variable *MKR Holding Value* is the natural logarithm of one plus the dollar value of MKR holdings in delegate *d*'s accounts at the time of voting on proposal *p*. As shown in Panel A of Table 2, the majority of delegates hold no MKR in their public related accounts. Among those with positive MKR holdings, the average dollar value is $4,163. This regression also includes a vector of delegate and proposal characteristics, delegate fixed effects, and year-month fixed effects. Standard errors are clustered at the delegate level.

Table 4 presents the regression results. The coefficient for MKR holdings is positive and significant at the 1% level across both specifications. Economically, a one-standard-deviation increase in *MKR Holding Value* is associated with a 2 percentage-point increase in the likelihood of voting correctly on a proposal.[20] This finding suggests that, consistent with our prediction, delegates' MKR holdings help align their incentives with those of MKR holders.

4.2.2 Conflicts of interest from other token holdings

In addition to MKR, delegates often hold other tokens in their portfolios. While delegates'

[20] The 2 percentage-point increase is calculated as the standard-deviation of *MKR Holding Value* (0.8) times the coefficient of 0.024 in Column (2) of Table 4.

MKR holdings can strengthen their interest alignment with MKR holders, their holdings of other tokens may create potential conflicts of interest, raising concerns among DAO participants. Figure 4 illustrates such a scenario, in which the delegate 'Monet-Supply' discloses holdings of tokens from Aave and COMP, competitors of MakerDAO. This disclosure prompts skepticism from an MKR holder, who voices concerns about conflicting incentives: "*We should need to trust you to act against your incentive. This is something I wouldn't trust anyone to do, as I believe incentives always win*."

We investigate the potential conflicts of interest arising from delegates' token holdings. For example, in the scenario depicted in Figure 4, suppose a proposal is introduced to lower the interest rate of DAI. Such as change could attract more users to MakerDAO but potentially divert users away from competitors like Aave. In this situation, could the delegate in question vote 'No' to protect the value of their Aave holdings, even if this proposal is value-enhancing for MakerDAO? To explore potential agency conflicts of this nature, we investigate whether delegates with token holdings whose interest conflicts with MakerDAO are more likely to vote incorrectly.

We determine whether token *i*'s interest conflicts or aligns with MKR regarding proposal *p* based on how the proposal affects the two tokens.[21] Specifically, we identify token *i* as a conflicted token for MKR in proposal *p* if on the proposal's pivotal vote date, the abnormal returns of token *i* and MKR are in opposite extreme deciles (either top or bottom deciles) of their respective distributions. The rationale is that if a proposal has divergent implications for MKR and token *i*, the voting outcome – whether approval or rejection – would cause opposite price reactions in MKR and token *i*. Similarly, we identify token *i* as an aligned token for MKR in proposal *p* if the abnormal returns of MKR and token *i* on the proposal's pivotal vote date are both in the top decile or both in the bottom decile of their respective distributions. Table IA.11 of Internet Appendix illustrates the application of our identification method in various scenarios.

We examine how the incentives derived from delegates' related token holdings relate to their voting behavior by estimating the following delegate-proposal level regression:

[21] We exclude tokens of Ethereum, DAI and MKR. Additionally, we exclude other stablecoins because stablecoins are known for its stable price around the peg.

$$Correct_{d,p} = \alpha + \beta_1 Conflicted\ Holding\ Value_{d,p} + \beta_2 Aligned\ Holding\ Value_{d,p} + \gamma' X_{d,p} + \eta_d + \theta_t + \epsilon_{d,p} \quad (5)$$

where the dependent variable, *Correct*, is as defined in Equation (4). The key independent variables include measures of conflicts or alignment of interests for delegate *d* with respect to proposal *p*. Specifically, we use *Conflicted Holding Value* - the natural logarithm of one plus the dollar value of conflicted token holdings - to measure the conflicts of interest for delegate *d* when he casts a vote on proposal *p*. Similarly, we construct an analogous measure of aligned token holdings. We include controls for delegate and proposal characteristics, as well as delegate and year-month fixed effects. Standard errors are clustered at the delegate level.

Table 5 presents the regression results. The coefficients for *Conflicted Holding Value* are significantly negative, indicating that delegates having larger holdings on tokens with interests misaligned with MKR are significantly less likely to cast a correct vote. These findings are also economically significant. For example, Model (2) shows that one-standard-deviation increase in *Conflicted Holding Value* decreases the probability of voting correctly by about 2.4 percentage points.[22] It is worth noting that these results likely represent conservative estimates, as delegates may conceal related token holdings in other accounts that are not publicly visible to the MakerDAO community, which could further exacerbate the agency problem.

For robustness, we construct three alternative measures of conflicted and aligned interests. *Conflicted Dummy* is a dummy variable that equals 1 if the delegate holds any tokens for which *Conflicted* is equal to 1, and zero otherwise. *Conflicted Number* is the number of tokens in the delegate's holdings for which *Conflicted* is equal to 1. *Conflicted Ratio* is calculated as the ratio of *Conflicted Number* to the total number of tokens held by the delegate on the vote date. In Table IA.12 of Internet Appendix, the results remain consistent with our baseline analysis. Overall, our analyses demonstrate that delegates' voting behavior is significantly related to potential conflicts of interest arising from their token holdings.

[22] The 2.4 percentage-point decrease is calculated as the standard deviation of *Conflicted Holding Value* (1.13) times the coefficient of -0.022 in Column (2) of Table 5.

4.3 Delegate Expertise

4.3.1 Delegate Expertise and Vote Correctness

In this section, we examine whether delegates are more likely to vote correctly on proposals when they have relevant expertise. We estimate a delegate-proposal level regression as specified below:

$$Correct_{d,p} = \alpha + \beta\, Expertise_{d,p} + \gamma' X_{d,p} + \eta_d + \theta_t + \epsilon_{d,t} \qquad (6)$$

where the dependent variable is a dummy variable equal to 1 if delegate d casts a correct vote on proposal p, and 0 otherwise. The key independent variable, $Expertise_{d,p}$, measures delegate d's level of expertise relevant to proposal p at the time of voting. As in Equations (4) and (5), we control for delegate and proposal characteristics as well as delegate and year-month fixed effects. Standard errors are clustered at the delegate level.

We measure a delegate's expertise on a proposal based on their experience holding tokens mentioned in forum discussions related to that proposal. This approach assumes that delegates who have previously held these tokens are more familiar with the proposal's subject matter and are therefore better equipped to make informed voting decisions. To construct this measure, we first identify tokens referenced in proposal discussions by searching for token names in the associated forum threads.[23] We exclude the three fundamental tokens of MKR, DAI, and ETH as they are relevant to virtually all proposals and thus do not provide additional insight into a delegate's specific topic expertise. Table IA.13 of Internet Appendix provides the list of tokens identified in proposal discussions.

Next, we classify a delegate as having experience with a particular token if they have previously held it. We focus on tokens that delegates previously owned but no longer hold at the time of voting, to avoid any potential confounding incentive effects. Delegates without any history of token ownership are excluded from our analysis. We construct an expertise measure, *Token*

[23] If a token's name is a single word such as Tether or two words, we require the entire token name to be present in the discussion. If a token's name contains three words such as Rocket Pool ETH, we require at least two words in the name to be matched in the text of discussion (e.g., Rocket Pool). Before performing the matching, we first exclude common words—including general Web3-related terms—from the count. Examples of these excluded words are: the, for, and, many, may, unit, token, coin, chain, finance, vote, network, governance, public, local, community, and others.

Experience, as the ratio of the number of unique tokens mentioned in the proposal discussion that the delegate previously held (henceforth "expertise token"), to the total number of unique tokens previously held by the delegate (excluding tokens currently held at the time of voting). As shown in Panel B of Table 2, the average *Token Experience* across our sample is 5%.

We also construct two alternative measures of expertise that incorporate the dollar values of token holdings, as delegates who invest more heavily in a token may have greater expertise about the token. The first alternative measure is the natural logarithm of one plus the average dollar value of the expertise tokens. We calculate the dollar value for each expertise token as the average dollar holding value during the delegate's ownership period. The second measure, *Portfolio Weight*, represents the average daily portfolio weight allocated to expertise tokens throughout the delegate's ownership period. On average, delegates in our sample held expertise tokens valued at $1,430, which constituted about 7.6% of their total portfolios.

Table 6 presents the regression results. We find that the coefficient for *Token Experience* is positive and significant in both Models (1) and (2). This result is also economically significant, as a one-standard-deviation increase in *Token Experience* increases the likelihood of voting correctly by 2.6 percentage points. Similarly, the coefficients for the other two expertise measures are also statistically and economically significant as shown in Models (3) to (6). For example, the coefficient for *Portfolio Weight* indicates that a one-standard-deviation increase in *Portfolio Weight* is associated with a 2.3% higher likelihood of voting correctly.

For robustness, we adopt an alternative measure of delegate expertise based on the delegate's voting experience on individual topics. Specifically, we measure a delegate's *Topic Experience* at the delegate-proposal level as the proportion of correct votes among all votes the delegate cast on proposals with the same topic tag. If a proposal has multiple topic tags, *Topic Experience* is defined as the average across those topic tags. Table 7 presents regression results of vote correctness on *Topic Experience*. The coefficient for topic experience is positive and significant in both models, supporting our prediction that delegates with greater expertise on a proposal are more likely to cast correct votes. In terms of economic significance, a one-standard-deviation increase in *Topic Experience* leads to a 2.1 percentage-point increase in the probability

of voting correctly.[24] Overall, the results in this subsection demonstrate that delegates' expertise significantly increases the likelihood of casting correct votes.

4.3.2 Delegate Expertise and Timing of Votes

In addition to correctness, the timing of delegates' votes is another variable of interest. Since votes are continuously visible during the entire voting period, voters face a tradeoff and may strategically choose vote timing: voting earlier allows them to influence subsequent voters and potentially affect the outcome, while voting later enables them to incorporate information from earlier votes, thus making more informed decisions. The latter part of this tradeoff is borne out by the negative coefficient on *Vote Early* as shown in Table 6 and Table 7. *Vote Early* is defined as the duration between a delegate's vote and the end of the voting period, divided by the entire duration of the voting period, and its value ranges between 0 and 1. The negative coefficient on *Vote Early* suggests that votes cast later in the voting period are more likely to be correct.

We posit that delegates with greater expertise are more likely to vote early because they rely less on information from other voters and thus have stronger incentives and greater ability to influence others. To test this prediction, we examine the relation between delegate expertise and vote timing. Specifically, we regress *Vote Early* on our measures of delegate expertise and present the results in Table 8. The coefficient on delegate expertise is positive across all specifications and statistically significant in half of them. For example, the coefficient for *Topic Experience* in Model (1) is positive and significant at the 0.01 level (t-statistic=2.84). Economically, this coefficient indicates that a one-standard-deviation increase in *Token Experience* corresponds to a 3.4% increase in the standard deviation of *Vote Early*. Overall, these findings suggest that delegates with greater expertise are inclined to vote earlier.

4.4 The Efficacy of Vote Delegation and MakerDAO Performance

As a key component of the MakerDAO governance framework, the delegation scheme's

[24] Our results remain robust across various model specifications for calculating adjusted returns on the pivotal vote date, as well as using an expanded two-day window to capture market reactions. Tables IA.14 and IA.15 of Internet Appendix present the robustness tests.

effectiveness can potentially have a significant impact on the performance and growth of the MakerDAO protocol. To shed light on this issue, we first assess how delegates' voting correctness is associated with future MKR returns. Given that most proposal voting on MakerDAO occurs within a week, we regress weekly abnormal returns of MKR on the lagged weekly weighted average of delegates' voting correctness. The regression model is specified as follows:

$$Abnormal\ Ret_{t+1} = \alpha + \beta Delegates'\ Correctness_t + \gamma' X_t + Year\ FE + \epsilon_t \qquad (7)$$

where the dependent variable is the MKR abnormal returns in week *t*+1. We follow Liu, Tsyvinski, and Wu (2022) and create weekly price factors CMKT, CSMB, and CMOM, allowing us to obtain residuals from the crypto-market model, the two-factor model, or the three-factor model. The key independent variable is *Delegates' Correctness*$_t$, which is the voting-power-weighted average of delegates' voting correctness over week *t*. We control for several weekly measures related to proposal voting, including the number of proposals under voting, the total number of voting participations, and the number of proposals tagged as "High Impact" under voting. We also control for MKR abnormal returns over week *t*-1. Additionally, we construct a measure of *Ordinary Voters' Correctness*, defined as the voting-power-weighted average of non-delegate MKR holders' voting correctness, using the same methodology as *Delegates' Correctness.*

Table 9 presents the regression results, where Models (1) to (3) presents regressions of abnormal returns esitmated using different factor models. The coefficient for *Delegates' Correctness* is positive and significant across all three models. Specifically, a one-standard-deviation increase in delegate vote correctness in a given week is associted with a 3.4% higher weekly returns in the next week.[25] In Model (4) of Table 9, we further control for *Ordinary Voters' Correctness*, and the coefficient on *Delegates' Correctness* remains significantly positive. To assess how effectively the delegation system needs to function for it to be cost-effective for MKR holders, we perform a simple cost-benefit analysis. Taking December 2022 as an example, the total monthly compensation paid to delegates is $108,690, while the average number of MKR tokens locked in delegation contracts is 129,183. This implies a monthly delegation cost of about $0.84

[25] The 3.4% increase is calculated as the standard deviation of *Delegates' Correctness* (42%) times the coefficient of 0.081 in Column (1).

($108,690/129,183) per MKR token. Given an MKR price of about $580 in December 2022, the monthly cost of delegation as a precentage of MKR price is roughly 0.14%, around 1/25th of the 3.4% increase in MKR weekly returns associated with a one-standard-deviation increase in weekly delegate vote correctness. This comparison indicates that even a small improvement in delegate vote correnctness can be value enhancing for MKR holders.

Given the heightened volatility in cryto markets (e.g., Griffin and Shams, 2020; Liu, Makarov, and Schoar, 2023), we corroborate the return analysis by further examining *Total Value Locked (TVL)*, which measures the real economic activity and liquidity staked within the MakerDAO protocol. TVL represents the total dollar value of all collateral assets locked within MakerDAO's smart contracts. We collect time series data on TVL in MakerDAO from DefiLlama, which is a leading analytics platform that calculates TVL for blockchains. Given that it may take time for economic activity to respond to passed proposals, we analyze the TVL growth rate over the following two weeks, calculated as $\frac{TVL_{t+2}-TVL_t}{TVL_t}$.

We repeat the regressions in Table 9 by replacing the dependent variable with TVL growth. Table 10 reports the results, which show that the coefficient for *Delegates' Correctness* is positive across all four models and significant in three of them.[26] Economically, a one-standard-deviation increase in delegate vote correctness in a given week is associated with a 1.2 percentage-point increase in the TVL growth rate, corresponding to a 16.7% increase relative to the standard deviation of TVL growth. These findings support the return analysis, indicating that delegates voting correctness enhances the performance of MakerDAO.

In addition to reducing the collective cost of governance and enhancing governance efficiency, the MakerDAO's vote delegation system is designed to increase MKR-holder participation and reduce the influence of large token holders.[27] To assess whether the delegation scheme has achieved these objectives, we examine voter participation and concentration since 2019 (prior to the introduction of delegation). Panel A of Figure 5 plots the monthly time series of

[26] The coefficient becomes marginally insignificant in Model (4), possibly due to the high correlation (0.77) between *Delegates' Correctness* and *Ordinary Voters' Correctness*.
[27] See https://forum.sky.money/t/delegation-and-makerdao/9429.

the ratio of total MKR tokens participating in voting relative to the circulating supply (orange line). Before the introduction of the delegation scheme in October 2021, the average voting participation rate is 3.5%. Following its launch, voting participation increases immediately, with the average rising to 10%. This finding suggests that the delegation scheme has substantially broadened MKR-holder participation in governance. Additionally, following the introduction of the delegation scheme, the voting power held by the largest voter decreases significantly, falling from an average of 52% to 26%. Likewise, the Herfindahl–Hirschman index (HHI) of voting power declines from 38% before October 2021 to 17% afterward, reflecting a more decentralized distribution of votes.

Governance security is another critical concern for the DAO community and is measured by the minimum number of voters required to achieve a 51% voting majority. When a small number of voters dominate the voting process, the risk of value capture by that group, at the expense of the DAO's long-term sustainability, increases significantly. In Panel B of Figure 5, we observe a clear reduction in governance risk following the introduction of the delegation system. The minimum number of voters required to control 51% of the voting power rises from 2 to 3.4. This finding suggests that the delegation scheme also improves governance security.

4.5 Token-Holder Preferences and Delegation Decisions

Malenko and Malenko (2024) show theoretically that, in pass-through voting, shareholders with heterogeneous preferences are more inclined to vote independently when their preferences differ significantly from those of available delegates. Although our paper primarily focuses on the effectiveness of the delegation scheme, the unique data on token-holders' delegation choices allow us to empirically examine this important theoretical prediction. Investigating this prediction is especially relevant given the rapidly growing practice of pass-through voting, which has the potential to significantly reshape the landscape of shareholder voting decisions and corporate control.[28]

[28] Brav, Li, Lund, and Pan (2025) analyze data from Vanguard's voting choice pilot program during 2023-2024 and find low investor participation (around 2%). Among participants, over 75% choose to vote according to either Vanguard- or company-advised policy. They further show that, under a hypothetical 100% participation rate, the observed investor voting choices could change the outcome of some closely contested proposals. However, they do not examine investors' decisions to participate in the voting choice program.

Building on the prediction of Malenko and Malenko (2024), we hypothesize that MKR holders with more divergent preferences are more likely to vote directly rather than delegating their votes. To test this hypothesis, we estimate a MKR holder–poll level regression as follows:

$$Delegate_{i,p} = \alpha + \beta_1 Conflicted\ Holding\ Value_{i,p} + \beta_2 MKR\ Holding\ Value_{i,p} + \gamma' X_{i,p} + \eta_i + \theta_p + \epsilon_{i,p} \quad (8)$$

where the dependent variable captures MKR holders' delegation choices. Specifically, we construct two dependent variables. First, *Delegate* is a dummy variable that takes the value of 1 if MKR holder *i* chooses to delegate their voting power for proposal *p*, and 0 if they opt to vote directly. [29] As shown in Panel D of Table 2, on average, 79% of MKR holders choose to delegate their votes rather than voting directly. Second, recognizing that MKR holders may delegate only a portion of their voting power while voting the reminder on their own, we define *Delegation Ratio* as the proportion of MKR tokens delegated relative to the total MKR tokens held by investor *i* for proposal *p*.

The key independent variable is *Conflicted Holding Value*, defined as the natural logarithm of one plus the dollar value of conflicted token holdings held by MKR holder *i* on the vote date of proposal *p*. To measure the alignment of interests between an investor and MakerDAO, we construct the variable *MKR Holding Value*, defined as the natural logarithm of the dollar value of MKR holdings by investor *i* on the vote date for proposal *p*. We also include several time-varying control variables capturing investor characteristics. Specifically, *Voting Experience* is the natural logarithm of one plus the number of poll votes in which investor *i* has personally participated prior to the current proposal. *Num of Tokens* is the natural logarithm of one plus the number of distinct tokens (exclude ETH and MKR) held in investor *i*'s account at the time of voting on the current proposal. The regression sample is conditional on MKR holders' voting participation, regardless of whether votes are cast directly or through a delegate. We incorporate proposal fixed effect (θ_p) but exclude MKR holder fixed effects.[30] All standard errors are clustered at the MKR holder level.

[29] If a delegate locks his MKR tokens under his own delegation contract, we classify him as voting independently.
[30] MKR holder fixed effects alone account for approximately 94% of the variation in delegation choices, as within-holder variation in delegation decisions is small.

Table 11 reports the regression results. The coefficient on *Conflicted Holding Value* is negative and statistically significant in all models, which is consistent with the theoretical prediction of Malenko and Malenko (2024) that token holders with stronger idiosyncratic preferences are more likely to participate directly in voting rather than delegating their votes. Economically, a one-standard-deviation increase in *Conflicted Holding Value* corresponds to a one percentage-point reduction in the likelihood of delegation. Conversely, the coefficient on *MKR Holding Value* is positive and significant, suggesting that MKR holders whose interests are more closely aligned with MakerDAO are more inclined to delegate their votes. Specifically, a one-standard-deviation increase in *MKR Holding Value* is associated with a 7.4 percentage-point increase in the likelihood of delegation. Overall, these results underscore the critical role of preference heterogeneity in shaping voting behavior in decentralized governance contexts.

5. CONCLUSION AND DISCUSSION

Decentralized Autonomous Organizations have emerged as a novel structure for managing decentralized communities. However, perfect decentralization can lead to inefficiencies, as not all token holders possess the time or expertise to make informed decisions that benefit the community's growth. To address this challenge, DAOs have introduced vote delegation schemes.

We provide the first evidence on the efficacy of vote delegation in DAOs using data from MakerDAO. We demonstrate that token holders reward delegates who cast correct votes and penalize those who cast incorrect ones, as evidenced by increases or decreases in delegation of voting power to these delegates. These changes in delegated voting power can translate into tangible financial incentives for delegates. We further find that delegates' incentives and expertise are crucial in shaping their voting behavior. Delegates with greater expertise and higher MKR holdings are more likely to vote correctly. However, when delegates hold tokens that conflict with the interests of MakerDAO, they are more likely to vote incorrectly. Moreover, we show that the efficacy of the vote delegation scheme is positively associated with future abnormal returns for MKR tokens and TVL growth. The implementation of delegation scheme also leads to broader voter participation, lower voter concentration and higher governance security.

Finally, we investigate MKR holders' decisions to delegate or vote on their own. Unlike traditional financial markets where data on individual investors' asset holdings and delegation decisions are often unavailable, the transparent nature of blockchain allows us to observe these behaviors directly. Our findings reveal that investors holding larger amounts of tokens that conflict with MKR tend to vote independently rather than delegating their votes to others. This aligns with the theory proposed by Malenko and Malenko (2024), which suggests that investors with stronger idiosyncratic preferences are more likely to participate directly in voting rather than delegating their voting power.

We should acknowledge that, while our focus on MakerDAO enables the use of detailed microdata and provides a rich set of early insights into the functioning of vote delegation schemes in DAOs, it also raises the questions about generalizability to other platforms. We nonetheless believe that our findings remain broadly relevant despite differences across platforms. Specifically, a central message from our analysis is that delegate incentives and expertise are pivotal to the effectiveness of the vote delegation scheme, which in turn correlates with future DAO performance and growth. Although these findings are based on a single, relatively mature DeFi platform, and may not fully transfer to all DAOs, the underlying mechanisms we identify are likely to extend beyond this specific case. In particular, the influence of delegate incentives and expertise on voting behavior and governance effectiveness should hold across decentralized governance systems, even if institutional details differ. This is especially plausible considering that heterogeneity in delegate incentives and expertise is likely to be at least as pronounced, if not more so, in other less mature DAO platforms. In this sense, MakerDAO serves as a useful benchmark for understanding how similar dynamics may emerge in other DAOs. Moreover, our findings have practical design implications: aligning delegate incentives, enhancing transparency about delegate holdings, and fostering delegate expertise are likely to improve governance quality across a wide range of decentralized organizations. A promising avenue for future research is to explore the determinants and consequences of variations in delegated voting schemes across DAO platforms.

References

Appel, I. and Grennan, J., 2024. Decentralized Governance and Digital Asset Prices. Working Paper.

Bena, J. and Zhang, S., 2023. Token-based Decentralized Governance, Data Economy and Platform Business Model. Working Paper.

Brav, A., Li, T., Lund, D. S., & Pan, Z. (2025). The Proxy Voting Choice Revolution. Working Paper.

Budish, E., & Sunderam, A. (2024). Blockchain Technology in Traditional Finance. Working Paper

Casella, A. and Macé, A., 2021. Does Vote Trading Improve Welfare? *Annual Review of Economics*, 13(1), pp.57-86.

Chen, M.A., Hu, S.S., Wang, J. and Wu, Q., 2023. Can Blockchain Technology Help Overcome Contractual Incompleteness? Evidence from State Laws. *Management Science*, 69(11), pp.6540-6567.

Cong, L.W., Rabetti, D., Wang, C.C. and Yan, Y., 2025. Centralized Governance in Decentralized Organizations. Working Paper.

Cong, L.W. and He, Z., 2019. Blockchain Disruption and Smart Contracts. *Review of Financial Studies*, 32(5), pp.1754-1797.

Cong, L.W., Li, Y. and Wang, N., 2021. Tokenomics: Dynamic Adoption and Valuation. *Review of Financial Studies*, 34(3), pp.1105-1155.

Cong, L.W., Li, Y. and Wang, N., 2022. Token-based Platform Finance. *Journal of Financial Economics*, 144(3), pp.972-991.

Ding, Q., Liebau, D., Wang, Z. and Xu, W., 2023. A Survey on Decentralized Autonomous Organizations (DAOs) and Their Governance. *World Scientific Annual Review of Fintech*, 1, p.2350001.

Edmans, A., Goldstein, I. and Jiang, W., 2015. Feedback Effects, Asymmetric Trading, and the Limits to Arbitrage. *American Economic Review*, 105(12), pp.3766-3797.

Fanti, G., Kogan, L., Oh, S., Ruan, K., Viswanath, P., & Wang, G. (2019, February). Compounding of Wealth in Proof-of-Stake Cryptocurrencies. *In International Conference on Financial Cryptography and Data Security (pp. 42-61). Cham: Springer International Publishing.*

Fanti, G., Kogan, L., & Viswanath, P. (2019). Economics of Proof-of-Stake Payment Systems. Working paper.

Ferreira, D. and Li, J., 2025. Governance and Management of Autonomous Organizations. Working Paper.

Fritsch, R., Müller, M. and Wattenhofer, R., 2022. Analyzing Voting Power in Decentralized Governance: Who Controls DAOs? Working Paper.

Griffin, J. and Shams, A., 2020. Is Bitcoin Really Untethered? 75(4), pp. 1913-1964.

Han, J., Lee, J. and Li, T., 2023. Dao Governance. Working Paper.

Han, J., Lee, J. and Li, T., 2025. A Review of DAO Governance: Recent Literature and Emerging Trends. *Journal of Corporate Finance*, p.102734.

He, J. and Huang, J., 2017. Product Market Competition in a World of Cross-ownership: Evidence from Institutional Blockholdings. *Review of Financial Studies*, 30(8), pp.2674-2718.

He, J.J., Huang, J. and Zhao, S., 2019. Internalizing Governance Externalities: The Role of Institutional Cross-ownership. *Journal of Financial Economics*, 134(2), pp.400-418.

Jermann, U. J. (2023). A Macro Finance Model for Proof-of-Stake Ethereum. Working Paper.

Jermann, U. J. (2024). Optimal Issuance for Proof-of-Stake Blockchains. Working Paper.

Jermann, U.J. and Xiang, H., 2024. Tokenomics: Optimal Monetary and Fee Policies. Working Paper.

Lee, S., Pinto, J., Rabetti, D. and Sadka, G., 2024. Blockchain-Induced Supply Chain Transparency and Firm Performance: The Role of Capacity Utilization. Working Paper.

Li, T., 2018. Outsourcing Corporate Governance: Conflicts of Interest within the Proxy Advisory Industry. *Management Science*, 64(6), pp.2951-2971.

Liu, J., Makarov, I. and Schoar, A., 2023. Anatomy of a Run: The Terra Luna Crash. Working Paper.

Liu, Y., Tsyvinski, A. and Wu, X., 2022. Common Risk Factors in Cryptocurrency. *Journal of Finance*, 77(2), pp.1133-1177.

Lumineau, F., Wang, W. and Schilke, O., 2021. Blockchain Governance - A New Way of Organizing Collaborations? *Organization Science*, 32(2), pp.500-521.

Makarov, I., & Schoar, A. (2022). Cryptocurrencies and Decentralized Finance (DeFi). *Brookings Papers on Economic Activity*, 2022(1), 141-215.

Malenko, A. and Malenko, N., 2024. Voting Choice. Working Paper.

McCahery, J.A., Sautner, Z. and Starks, L.T., 2016. Behind the Scenes: The Corporate Governance Preferences of Institutional Investors. *Journal of Finance*, 71(6), pp.2905-2932.

Puschmann, T., & Huang-Sui, M. (2024). A taxonomy for decentralized finance. *International Review of Financial Analysis*, *92*, 103083.

Saleh, F., 2021. Blockchain without Waste: Proof-of-Stake. *Review of Financial Studies*, 34(3), pp.1156-1190.

Sun, X., Chen, X., Stasinakis, C. and Sermpinis, G., 2022. Voter Coalitions and Democracy in Decentralized Finance: Evidence from MakerDAO. Working Paper.

Yermack, D. (2017). Corporate governance and blockchains. *Review of Finance*, *21*(1), 7-31.

Figure 1
MakerDAO governance process

This figure illustrates the governance process within MakerDAO. The process begins with stakeholders submitting proposals on the discussion forum, where community members—regardless of MKR holdings—can participate in open and transparent deliberation. Since the first two stages occur off-chain (i.e., not recorded on the blockchain), participation is unrestricted. Following discussions, designated facilitators consolidate viable proposals into polls, which are then presented on the governance portal each Monday. At this stage, MKR token holders and delegates cast votes to determine the proposals' viability. Successful proposals advance to the executive voting phase, where final assessments are conducted before approval and execution. The last two stages occur on-chain, ensuring immutability and enforceability within the MakerDAO system.

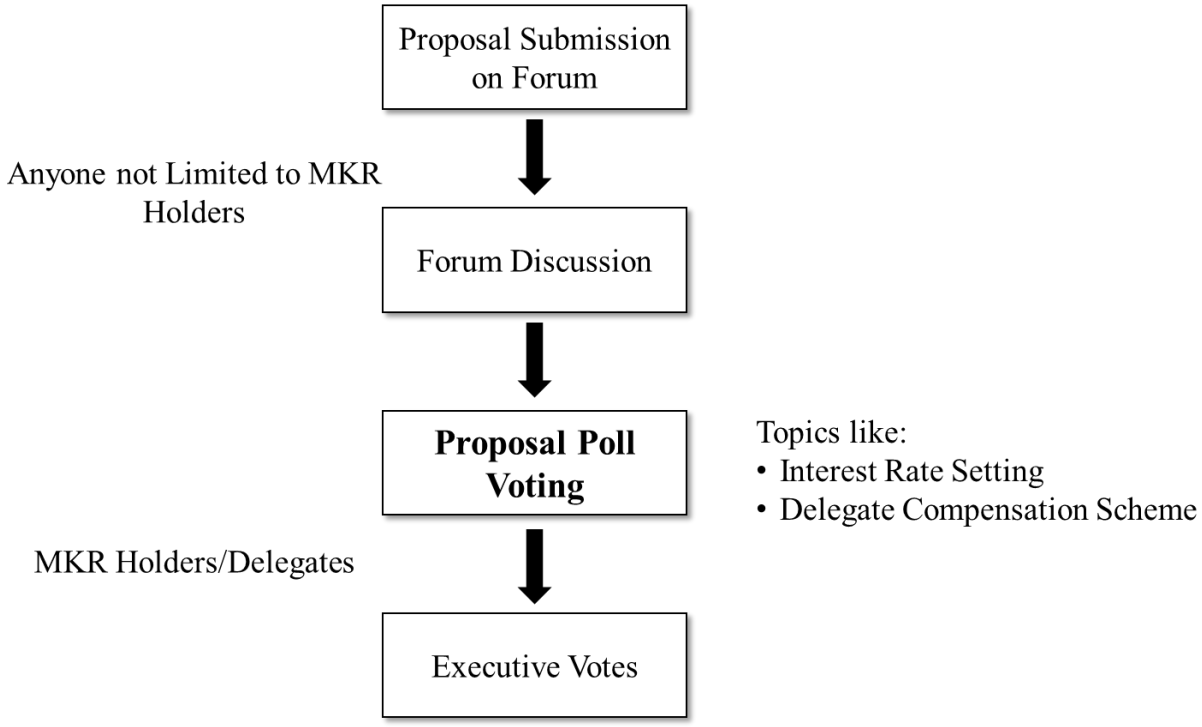


Figure 2
Delegation process within MakerDAO

This figure illustrates the delegation process within MakerDAO, detailing the steps through which MKR holders delegate their voting rights. The process begins with an institution or individual establishing a delegation contract, thereby assuming the role of a delegate (Step 1). Once the contract is successfully created, the delegate's profile and contract address are displayed on the official MakerDAO website. MKR holders seeking to delegate their voting rights can then select a trusted delegate and lock their MKR tokens into the contract (Step 2), granting the delegate the authority to vote on their behalf in poll voting (Step 3). If an MKR holder chooses to terminate the delegation arrangement, they can withdraw their MKR tokens from the delegate (Step 4), regaining full control over their voting rights and having the option to either select a new delegate or abstain from delegation entirely.

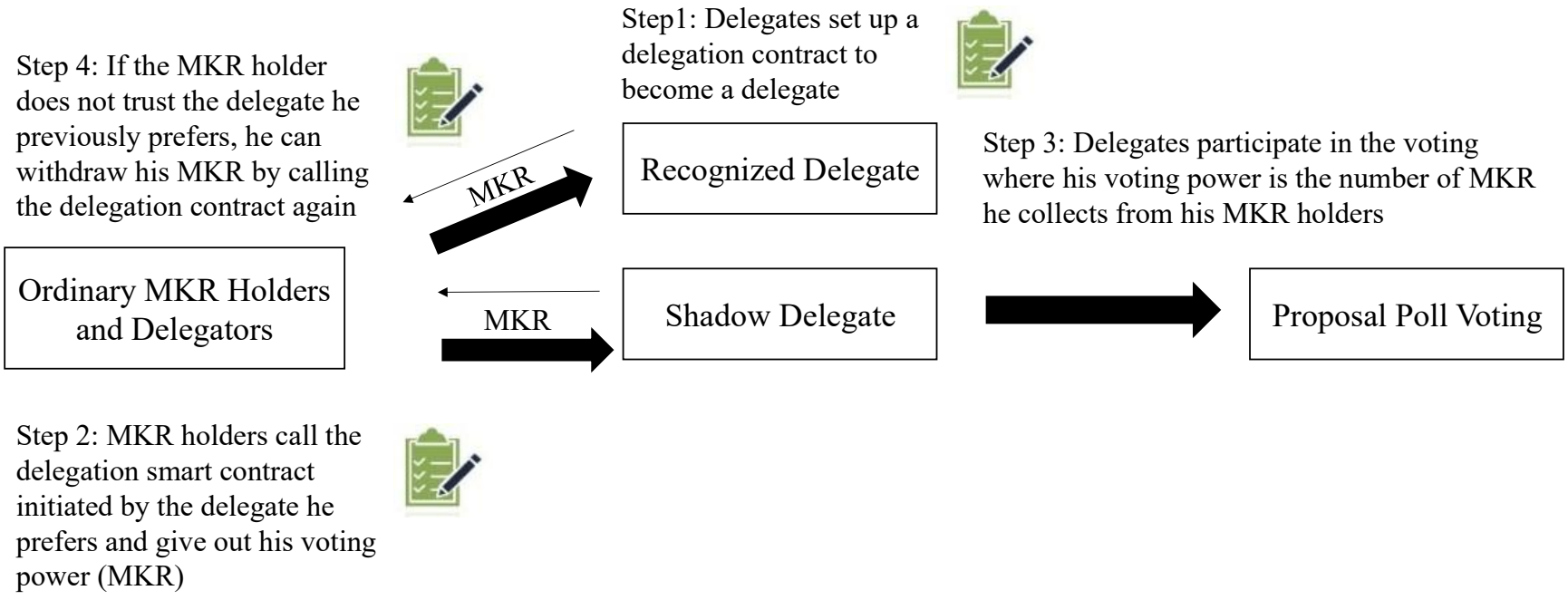


Figure 3

Classification of value-enhancing vs. value-destroying votes: an example

This figure illustrates the classification of value-enhancing versus value-destroying votes, using Poll 665 as an example. The poll concerns the removal of swap fees, and the figure presents the cumulative voting tokens alongside MKR abnormal returns over the voting period. The average participation in proposal voting over the preceding month is 67,043 MKR tokens (expected votes). To meet the 50% threshold, one side must accumulate at least 33,521.5 MKR tokens, a level reached by the "Yes" votes on November 3, 2021. Additionally, on the same day, the incremental MKR tokens cast in favor of the "Yes" decision amount to 15% of the expected votes, surpassing the second condition, which requires that votes cast on the pivotal vote date exceed 10% of the expected total votes. Therefore, November 3, 2021, is identified as the pivotal vote date for Poll 665. Next, we compute the daily abnormal return of MKR using the Crypto-CAPM model and plot the cumulative abnormal return over the voting period. On the pivotal vote date, the abnormal return for MKR is a positive 12.2%, coinciding with the victory of the "Yes" side. This outcome suggests that the market perceives the "Yes" decision as value-enhancing for MKR, validating it as the appropriate choice for this proposal.

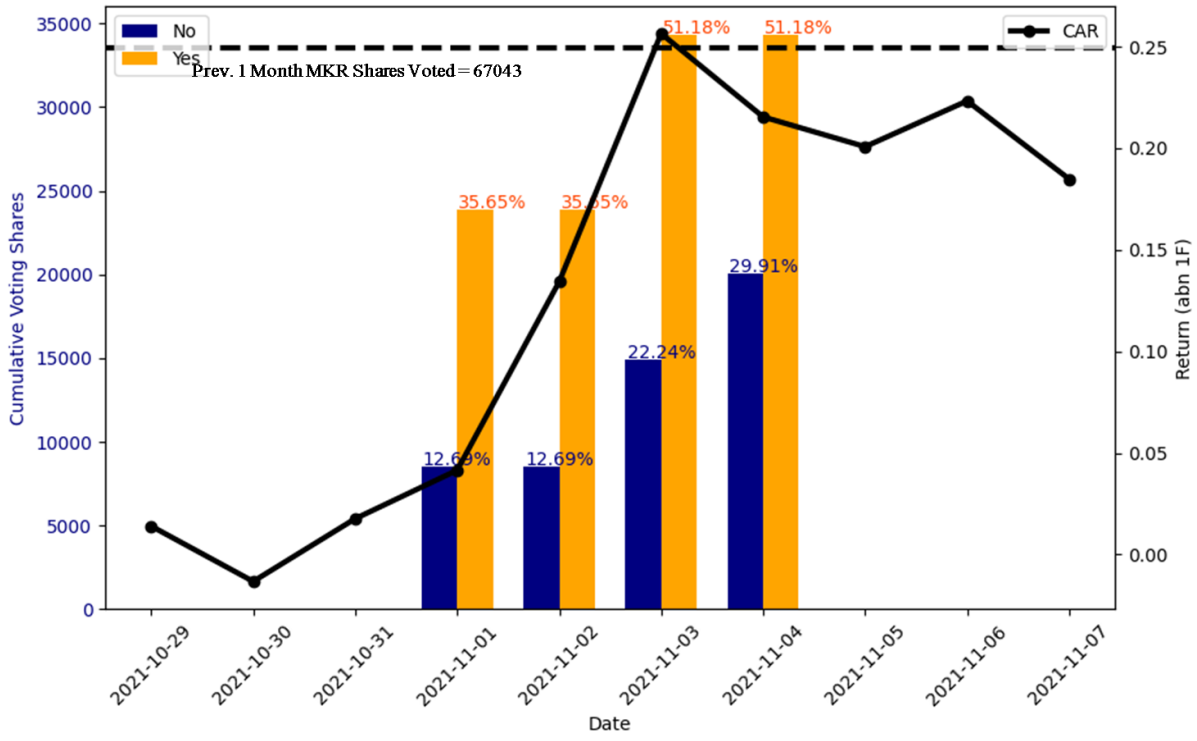
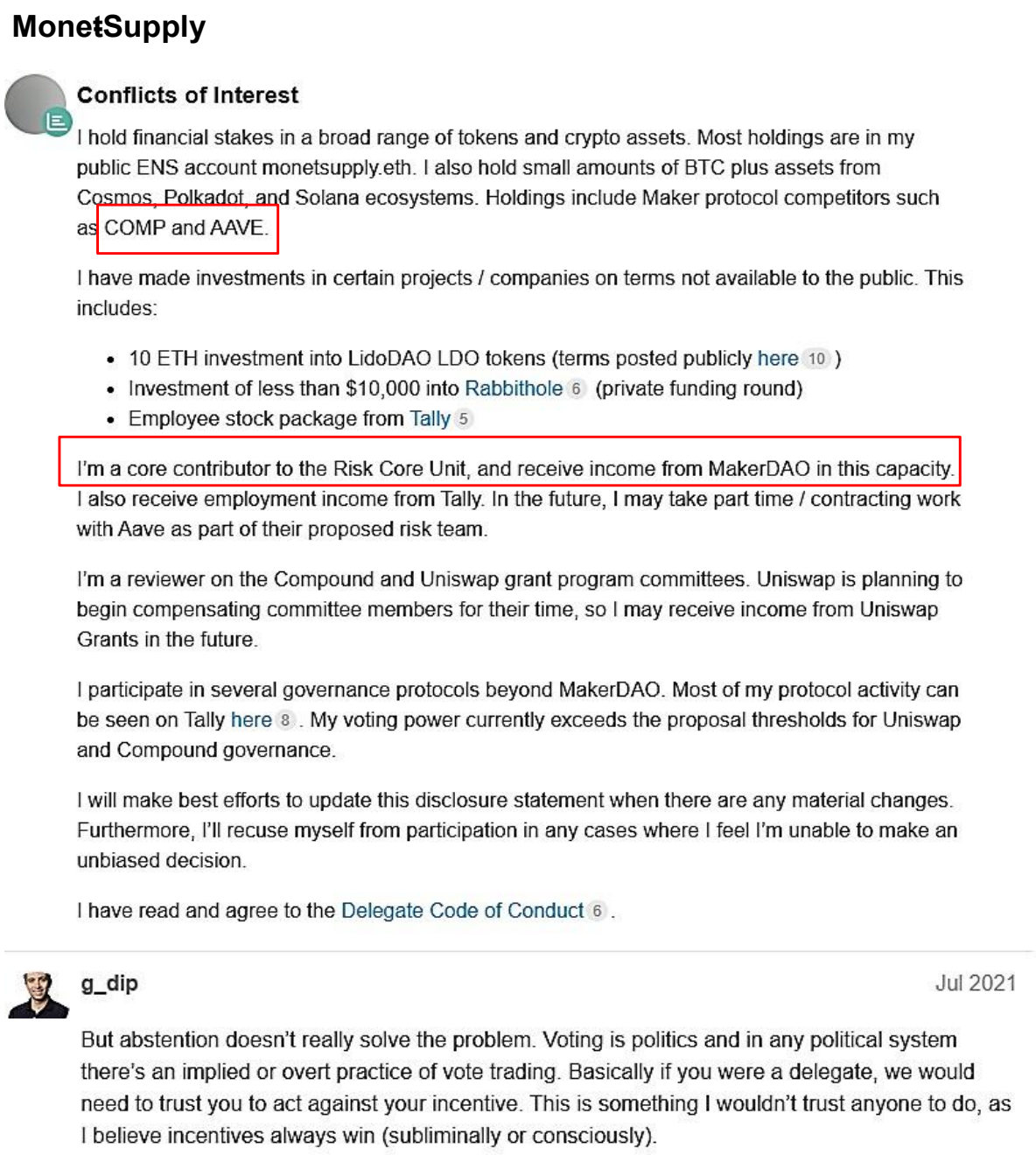


Figure 4
Conflicts of interest due to delegates' token holdings: an example

This figure presents a case illustrating potential conflicts of interest involving the delegate 'Monet-Supply' and MKR holders, as displayed on the delegate's forum homepage. Monet-Supply holds tokens from MakerDAO's competitors, including COMP and AAVE. Additionally, Monet-Supply serves as an employee within MakerDAO's Risk Core Unit. These overlapping roles create potential agency conflicts, particularly when a proposal benefits MakerDAO but negatively impacts competitors such as Aave. Following this disclosure, an MKR holder known as g_dip publicly raised concerns about a possible agency problem, highlighting the governance challenges associated with delegate incentives and conflicts of interest.



MonetSupply

Conflicts of Interest

I hold financial stakes in a broad range of tokens and crypto assets. Most holdings are in my public ENS account monetsupply.eth. I also hold small amounts of BTC plus assets from Cosmos, Polkadot, and Solana ecosystems. Holdings include Maker protocol competitors such as COMP and AAVE.

I have made investments in certain projects / companies on terms not available to the public. This includes:

- 10 ETH investment into LidoDAO LDO tokens (terms posted publicly here 10)
- Investment of less than $10,000 into Rabbithole 6 (private funding round)
- Employee stock package from Tally 5

I'm a core contributor to the Risk Core Unit, and receive income from MakerDAO in this capacity. I also receive employment income from Tally. In the future, I may take part time / contracting work with Aave as part of their proposed risk team.

I'm a reviewer on the Compound and Uniswap grant program committees. Uniswap is planning to begin compensating committee members for their time, so I may receive income from Uniswap Grants in the future.

I participate in several governance protocols beyond MakerDAO. Most of my protocol activity can be seen on Tally here 8 . My voting power currently exceeds the proposal thresholds for Uniswap and Compound governance.

I will make best efforts to update this disclosure statement when there are any material changes. Furthermore, I'll recuse myself from participation in any cases where I feel I'm unable to make an unbiased decision.

I have read and agree to the Delegate Code of Conduct 6 .

g_dip Jul 2021

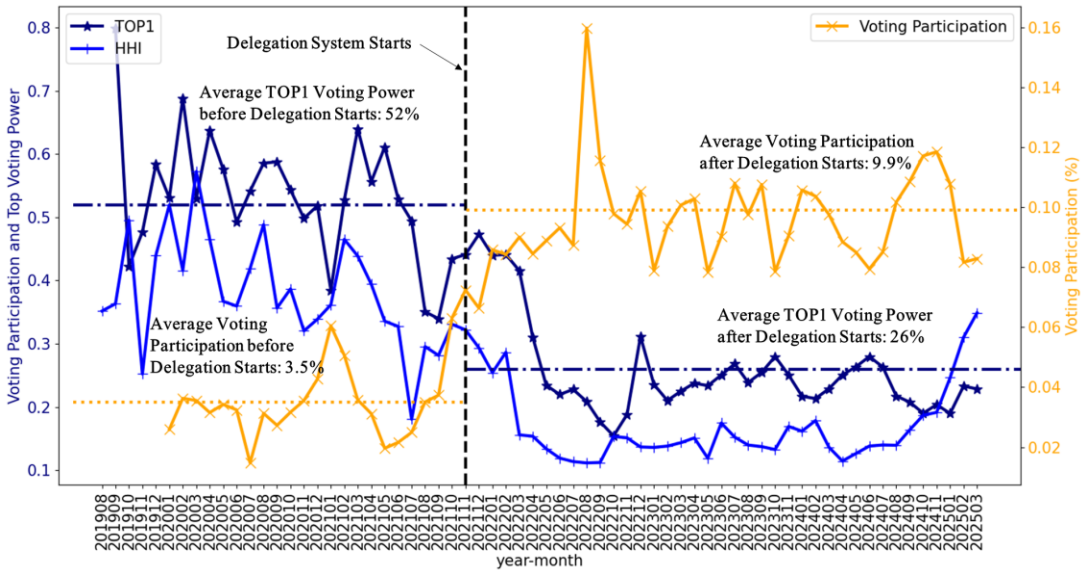
But abstention doesn't really solve the problem. Voting is politics and in any political system there's an implied or overt practice of vote trading. Basically if you were a delegate, we would need to trust you to act against your incentive. This is something I wouldn't trust anyone to do, as I believe incentives always win (subliminally or consciously).

Figure 5

Voting participation, concentration and security before and after delegation starts

This figure illustrates the impact of the delegation scheme implemented in October 2021 on MKR voting dynamics. In Panel A, it shows that the proportion of MKR tokens participating in the voting process (yellow line) increased after the scheme's introduction, while voting concentration decreased, as indicated by the declining proportion of MKR tokens cast by TOP1 voters (navy line) and HHI (Herfindahl–Hirschman index) of all voting power (blue line). In Panel B, it shows the reduction of governance risk after the scheme's introduction as indicated by the minimum number of voters needed to achieve 51% voting power increases from 2 to 3.4.

Panel A: Voting Participation and Centralization Before and After Delegation



Panel B: Minimum Number of Voters Needed to Achieve 51% Before and After Delegation

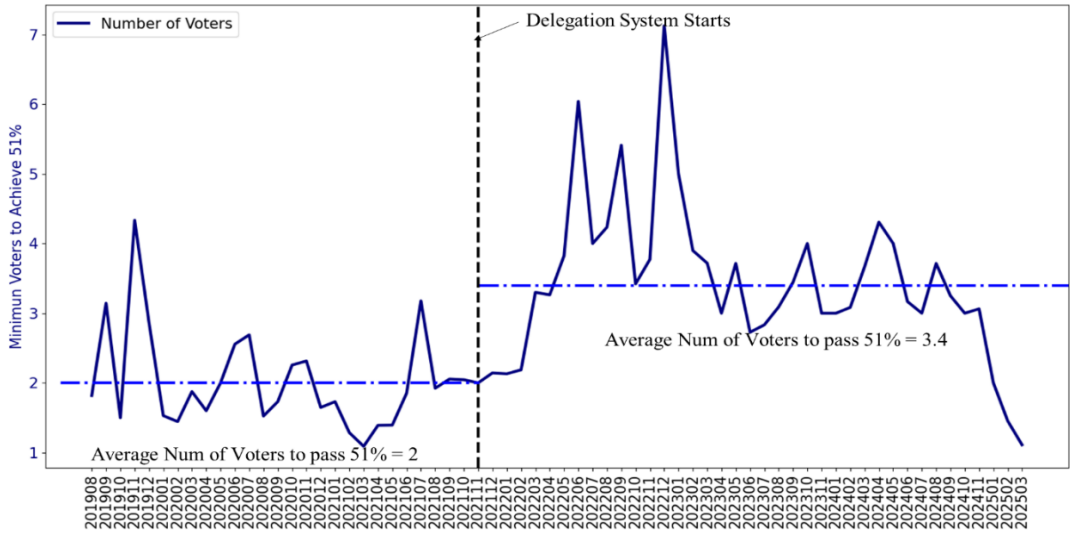


Table 1
Classifications of correct votes

The classification process begins by assessing the MKR market's reaction on the pivotal vote date (Positive or Negative). This is then considered in conjunction with the proposal outcome (pass or fail) to determine whether the proposal is value-enhancing or value-destroying. For example, if the market reaction is positive and the proposal passes (Poll A), the proposal is deemed value-enhancing. Conversely, if the market reaction is positive but the proposal fails (Poll B), the proposal is considered value-destroying. A delegate's vote is then compared to this value assessment. Voting "Yes" on a value-enhancing proposal (Poll A or D) or "No" on a value-destroying proposal (Poll B or C) is classified as correct. Conversely, voting "Yes" on a value-destroying proposal or "No" on a value-enhancing proposal is classified as incorrect.

	Poll A		Poll B		Poll C		Poll D	
MKR market reaction on the pivotal vote date	Positive		Positive		Negative		Negative	
Proposal outcome	Pass		Fail		Pass		Fail	
Decision 1: Value enhancing or destroying	*Value Enhancing*		*Value Destroying*		*Value Destroying*		*Value Enhancing*	
Delegate's Vote	Yes	No	Yes	No	Yes	No	Yes	No
Decision 2: Vote Correctness	*Correct*	*Incorrect*	*Incorrect*	*Correct*	*Incorrect*	*Correct*	*Correct*	*Incorrect*

Table 2
Summary statistics

Panel A is for variables at the delegate-vote date level. *Delegate Growth* is the ratio of the net change in the MKR delegation amount within 30 days after the vote date to the delegate's existing MKR delegation amount on the vote date. To avoid outliers, we winsorize delegate growth at the 10th and 90th percentile. *MKR Increase* is an ordinal variable taking the value 1, 2, or 3 if the change in delegated MKR tokens following the focal delegate's vote is negative, zero, or positive. *Delegators Increase* equals 1, 2, or 3 if the change in the number of MKR holders delegating to the focal delegate after the vote is negative, zero, or positive. *Participation* is the number of proposals participated by the delegate on the vote date. *Correct Vote* is the ratio of the number of correct votes over *Participation* on the vote date. *MKR Holding Value* is the natural logarithm of the dollar value of the MKR holdings of the delegate on the vote date. Panel B is for variables at the delegate-poll level. *Topic Experience* is the ratio of the number of correct votes a delegate has cast to the total number of votes they have participated in on proposals with the same tags as the current proposal. *Token Experience* is the ratio of the number of unique tokens mentioned in the proposal discussion and had been held by the delegate ("expertise token"), to the total number of unique tokens in the delegate's portfolio prior to the time of voting (excluding those currently held by the delegate). *Token Holding Value* is the natural logarithm of the average dollar value of tokens that have been held by the delegate and mentioned in discussion posts. *Token Portfolio Weight* is the average percentage of the dollar value of tokens held by the delegate and mentioned in discussion posts. *Conflicted (Aligned) Holding Value* is the natural logarithm of the dollar value of the interest-conflicted (aligned) token held by the delegate on the vote date. *Vote Early* is the duration between a delegate's vote and the end of the poll, normalized by the total voting duration from the poll's start to its conclusion. Panel C is for weekly variables. *Abnormal Return* is the weekly adjusted return of MKR. *TVL Growth [0,+2]* is growth rate of total value locked in Maker in the following two weeks, calculated as $(TVL_{t+2}\text{-}TVL_t)/TVL_t$. *Delegates' Correctness* is the weekly voting-power weighted average of delegates' voting correctness. *Ordinary MKR Voters' Correctness* is the version for ordinary MKR voters. Panel D is for variables at the MKR holder-poll level. *Delegate* is a dummy measuring the delegation choices of the MKR investor. *Delegation Share Ratio* is the ratio of the MKR tokens delegated to the total MKR tokens held by the investor. *Conflicted Holding Value* and *MKR Holding Value* are constructed the same as the above but at MKR holder-poll level. All the other variables are defined in Appendix.

	#Obs	Mean	SD	Min	P25	P50	P75	Max
Panel A: Delegate-Vote Date Level Variables								
MKR Increase (ordinal)	2,476	2.07	0.73	1.00	2.00	2.00	3.00	3.00
Delegator Increase (ordinal)	2,476	2.09	0.69	1.00	2.00	2.00	3.00	3.00
Delegate Growth (continuous)	2,476	0.03	0.40	-0.66	0.00	0.00	0.00	0.95
Participation	2,476	2.75	2.18	1.00	1.00	2.00	3.00	19.00
Correct Vote	2,476	0.48	0.46	0.00	0.00	0.33	1.00	1.00
Shadow	2,476	0.20	0.40	0.00	0.00	0.00	0.00	1.00
Days to Expire (days)	2,476	109.24	123.80	0.00	0.00	37.00	232.17	362.00
Num of Delegators	2,476	4.21	4.51	0.00	1.00	2.00	6.00	30.00
Num of High Impact	2,476	1.54	1.64	0.00	0.00	1.00	2.00	9.00
Voting Power (%)	2,476	5.38	7.81	0.00	0.00	1.05	9.35	51.19
MKR Holding Value	2,476	0.10	0.84	0.00	0.00	0.00	0.00	10.85
Panel B: Delegate-Poll Level Variables								
Topic Experience	5,838	0.48	0.27	0.00	0.29	0.47	0.65	1.00
Token Experience	1,478	0.05	0.16	0.00	0.00	0.00	0.00	1.00
Token Holding Value	1,478	1.17	2.95	0.00	0.00	0.00	0.00	10.36
Token Portfolio Weight	1,478	0.08	0.23	0.00	0.00	0.00	0.00	1.00
Conflicted Holding Value	1,638	0.20	1.13	0.00	0.00	0.00	0.00	11.78
Aligned Holding Value	1,638	0.46	1.87	0.00	0.00	0.00	0.00	11.67
Vote Early	6,806	0.47	0.32	0.00	0.29	0.43	0.67	1.00
Panel C: Weekly Variables								
Abnormal Return	133	0.00	0.11	-0.42	-0.06	-0.02	0.06	0.56
TVL Growth [0, +2]	133	-0.01	0.07	-0.22	-0.06	-0.01	0.03	0.14
Delegates' Correctness	133	0.49	0.42	0.00	0.05	0.51	0.96	1.00
Ordinary MKR Voters' Correctness	131	0.44	0.43	0.00	0.00	0.35	0.98	1.00
Num of Votes	133	117.81	117.49	4.00	40.00	78.00	160.00	597.00
Panel D: MKR Holder-Poll Level Variables								
Delegate	30,757	0.79	0.41	0.00	1.00	1.00	1.00	1.00
Delegation Share Ratio	30,757	0.78	0.41	0.00	1.00	1.00	1.00	1.00
Conflicted Holding Value	30,757	0.09	0.75	0.00	0.00	0.00	0.00	15.59
MKR Holding Value	30,757	7.65	4.65	-26.09	3.70	8.20	11.09	20.01
Voting Experience	30,757	0.36	0.94	0.00	0.00	0.00	0.00	5.75
Num of Tokens	30,757	2.10	1.57	0.00	0.69	2.20	3.40	7.04

Table 3
Delegate vote correctness and future delegation changes

This table presents delegate-vote date level regressions that investigate whether delegates making correct (incorrect) vote choices are rewarded (punished) by MKR holders. The sample includes observations where a delegate casts a vote on a given day. Models (1) to (4) report ordered logit regressions and Models (5) to (6) report OLS regressions. The dependent variable in Models (1) and (2) is *MKR Increase*, an ordinal variable that takes the value 1, 2, or 3 if the net change in delegated MKR tokens following the focal delegate's vote is negative, zero, or positive. In Models (3) and (4), the dependent variable is *Delegator Increase*, coded analogously: it equals 1, 2, or 3 if the net change in the number of MKR holders delegating to the focal delegate after the vote is negative, zero, or positive. In Models (5) and (6), the dependent variable is *Delegate Growth*, defined as the growth rate of delegated tokens within 30 days after the delegate's vote. This variable is winsorized at the 10th and 90th percentiles to minimize the influence of outliers. The main independent variable is *Correct Vote*, defined as proportion of correct votes cast by delegate d across all proposals voted on that date. We also control for a broad set of delegate and proposal characteristics. Definitions of the variables are provided in Appendix. Model (1), (3) and (5) include delegate fixed effects and year-month fixed effects are added in (2), (4) and (6). T-statistics adjusted for heteroscedasticity and clustered at delegate level are reported in parentheses. *, ** and *** denote statistical significance at 10%, 5% and 1% level, respectively.

Dep. Var.	MKR Increase		Delegator Increase		Delegate Growth	
	(1)	(2)	(3)	(4)	(5)	(6)
Correct Vote	**0.180****	**0.189***	**0.268*****	**0.223****	**0.030****	**0.027***
	(2.07)	**(1.79)**	**(3.17)**	**(2.14)**	**(2.09)**	**(1.87)**
Days to Expire	0.006***	0.006***	0.006***	0.006***	0.001***	0.001***
	(5.98)	(5.20)	(6.37)	(5.59)	(5.64)	(4.19)
Participation	-0.016	-0.044*	-0.036	-0.048*	0.003	-0.002
	(-0.58)	(-1.86)	(-1.19)	(-1.83)	(0.69)	(-0.44)
Num of Delegators	-0.271***	-0.265***	-0.336***	-0.376***	-0.031***	-0.021***
	(-2.92)	(-2.93)	(-3.80)	(-3.53)	(-3.85)	(-2.66)
Num of High Impact	0.030	0.091***	0.077*	0.111***	0.000	0.010**
	(0.66)	(2.79)	(1.266)	(3.16)	(0.06)	(2.04)
Voting Power	-0.053**	-0.048**	-0.024	-0.007	-0.023***	-0.023***
	(-2.07)	(-2.06)	(-0.94)	(-0.29)	(-6.68)	(-7.49)
MKR Holding Value	-0.106	-0.078	-0.029	0.008	-0.017	-0.008
	(-1.14)	(-1.05)	(-0.21)	(0.07)	(-1.11)	(-0.71)
Month FE	No	Yes	No	Yes	No	Yes
Delegate FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	2476	2476	2476	2476	2427	2427
(Pseudo) Adj. R^2	0.166	0.218	0.190	0.250	0.295	0.365
vce	Delegate	Delegate	Delegate	Delegate	Delegate	Delegate

Table 4
Delegates' MKR holdings and vote correctness

This table presents the delegate-poll level regressions of delegates' correct voting on their MKR holdings. The regression is at delegate-poll level. The dependent variable, *Correct*, is a dummy that equals one if the delegate vote correctly on the poll, and zero otherwise. The main independent variable is *MKR Holding Value*, defined as the natural logarithm of one plus the dollar value of MKR holdings by the delegate at the time of voting. We also control for delegate and poll characteristics Definitions of all the variables are in Appendix. Model (1) use delegate individual fixed effect and Model (2) adds year-month fixed effect. T-statistics adjusted for heteroscedasticity and clustered at delegate level are reported in parentheses. *, ** and *** denote statistical significance at 10%, 5% and 1% level, respectively.

Dep. Var.	Correct	
	(1)	(2)
MKR Holding Value	**0.021*****	**0.024*****
	(4.30)	**(3.95)**
High Impact	-0.058***	-0.079***
	(-3.35)	(-4.53)
Days to Expire	0.000***	0.001
	(4.99)	(0.91)
Vote Early	-0.082**	-0.056
	(-2.14)	(-1.47)
Num of Delegators	-0.001	0.003
	(-0.17)	(0.80)
Voting Power	0.002	0.000
	(0.72)	(0.00)
Constant	0.428***	0.223
	(11.49)	(0.68)
Month FE	No	Yes
Delegate FE	Yes	Yes
Observations	6781	6781
Adj. R^2	0.035	0.169
vce	Delegate	Delegate

Table 5
Conflicts of interest and delegate vote correctness

This table presents delegate-poll level regressions of delegates' vote correctness and their holdings of tokens with misaligned interests. The dependent variable is *Correct,* which equals 1 if the delegate votes correctly on a proposal or 0 otherwise. Definitions of the variables are in Appendix. The independent variables *Conflicted (Aligned) Holding Value* is the logarithm of one plus the dollar value of the interest-Conflicted (aligned) token (excluding ETH, MKR and stablecoins) held by the delegate on the vote date. Model (1) includes delegate fixed effect and Model (2) adds year-month fixed effect. T-statistics adjusted for heteroscedasticity and clustered at delegate level are reported in parentheses. *, ** and *** denote statistical significance at 10%, 5% and 1% level, respectively.

Dep. Var.	Correct	
	(1)	(2)
Conflicted Holding Value	**-0.021***	**-0.022****
	(-1.83)	**(-2.13)**
Aligned Holding Value	0.014*	0.007
	(1.88)	(0.85)
High Impact	-0.007	0.034
	(-0.19)	(0.92)
Days to Expire	-0.000	0.001
	(-0.18)	(0.59)
Vote Early	-0.062	-0.043
	(-1.00)	(-0.71)
Num of Delegators	-0.017**	-0.014
	(-2.25)	(-1.65)
Voting Power	0.000	0.002
	(0.09)	(0.57)
MKR Holding Value	0.018***	0.033***
	(2.79)	(3.32)
Constant	0.572***	0.201
	(6.16)	(0.38)
Month FE	No	Yes
Delegate FE	Yes	Yes
Observations	1621	1619
Adj. R^2	0.051	0.133
vce	Delegate	Delegate

Table 6
Delegate token expertise and vote correctness

This table presents delegate-poll regressions of delegates' vote correctness on their expertise with respect to the proposals. The dependent variable is, *Correct*, is a dummy variable which equals one if the delegate's vote in one poll is correct and zero otherwise. The main independent variable in Model (1) and (2) is *Token Experience,* which is the ratio of the number of unique tokens mentioned in the proposal discussion and had been held by the delegate ("expertise token") to the total number of unique tokens in the delegate's portfolio prior to the time of voting (excluding those currently held by the delegate). The independent variable in Model (3) and (4) is *Token Holding Value*, which is the logarithm of one plus the average dollar value of tokens that have been held by the delegate and mentioned in discussion posts. In Model (5) and (6), the independent variable is *Token Portfolio Weight*, which is the average portfolio ratio of the dollar value of tokens held by the delegate and mentioned in discussion posts. Definitions of the variables are in Appendix. Delegate fixed effect is included in Model (1), (3) and (5). Year-month fixed effect is added in Model (2), (4) and (6). T-statistics adjusted for heteroscedasticity and clustered at delegate level are reported in parentheses. *, ** and *** denote statistical significance at 10%, 5% and 1% level, respectively.

Dep. Var.	Correct					
	(1)	(2)	(3)	(4)	(5)	(6)
Token Experience	**0.158****	**0.164*****				
	(2.21)	**(2.83)**				
Token Holding Value			**0.007****	**0.008*****		
			(2.27)	**(3.51)**		
Token Portfolio Weight					**0.069**	**0.099*****
					(1.67)	**(4.33)**
High Impact	0.011	0.031	0.011	0.030	0.013	0.031
	(0.34)	(0.87)	(0.34)	(0.83)	(0.38)	(0.87)
Days to Expire	0.001***	0.004	0.001***	0.004	0.001***	0.004
	(3.24)	(1.55)	(3.25)	(1.52)	(3.27)	(1.56)
Vote Early	-0.043	-0.012	-0.044	-0.013	-0.041	-0.011
	(-0.54)	(-0.12)	(-0.55)	(-0.13)	(-0.52)	(-0.11)
Num of Delegators	0.010	0.016**	0.009	0.016**	0.009	0.016**
	(1.39)	(2.57)	(1.36)	(2.56)	(1.39)	(2.65)
Voting Power	0.002	-0.003	0.002	-0.003	0.002	-0.003
	(0.58)	(-0.51)	(0.67)	(-0.48)	(0.66)	(-0.48)
MKR Holding Value	0.025***	0.034***	0.024***	0.034***	0.024***	0.033***
	(2.94)	(4.31)	(2.90)	(4.20)	(2.96)	(4.28)
Constant	0.252***	-0.555	0.252***	-0.544	0.251***	-0.571
	(4.14)	(-0.98)	(4.03)	(-0.95)	(4.10)	(-1.00)
Month FE	No	Yes	No	Yes	No	Yes
Delegate FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	1469	1468	1469	1468	1469	1468
Adj. R^2	0.040	0.124	0.038	0.123	0.038	0.123
vce	Delegate	Delegate	Delegate	Delegate	Delegate	Delegate

Table 7
Delegate topic experience and vote correctness

The table presents delegate-poll level regressions of delegates' vote correctness on their experience in the poll topics. The dependent variable, *Correct*, is a dummy variable which equals one if the delegate's vote in one poll is correct and zero otherwise. The main independent variable is *Topic Experience*, which is the ratio of the number of correct votes a delegate has cast to the total number of votes they have participated in on proposals with the same tags as the current proposal. Definitions of the variables are in Appendix. Year-month fixed effect is used in Model (1). Delegate individual fixed effect is added in Model (2). T-statistics adjusted for heteroscedasticity and clustered at delegate level are reported in parentheses. *, ** and *** denote statistical significance at 10%, 5% and 1% level, respectively.

Dep. Var.	Correct	
	(1)	(2)
Topic Experience	**0.082*****	**0.078****
	(2.70)	**(2.15)**
High Impact	-0.087***	-0.091***
	(-4.27)	(-4.37)
Days to Expire	0.000*	0.000***
	(1.83)	(3.06)
Vote Early	-0.020	-0.029
	(-0.60)	(-0.69)
Num of Delegators	0.001	0.001
	(0.67)	(0.50)
Voting Power	-0.000	0.001
	(-0.12)	(0.64)
MKR Holding Value	0.016**	0.025***
	(2.28)	(3.44)
Constant	0.453***	0.424***
	(17.11)	(13.07)
Month FE	Yes	Yes
Delegate FE	No	Yes
Observations	5838	5834
Adj. R^2	0.163	0.167
vce	Delegate	Delegate

Table 8
Delegate's expertise and timing of votes

The table presents delegate-poll level regressions of delegates' vote time choice on their experience. The dependent variable, *Vote Early*, is the duration between a delegate's vote and the end of the poll, normalized by the total voting duration from the poll's start to its conclusion. In Model (1) and (2), *Token Experience* is the ratio of the number of unique tokens mentioned in the proposal discussion and had been held by the delegate ("expertise token") to the total number of unique tokens in the delegate's portfolio prior to the time of voting (excluding those currently held by the delegate). In Model (3) and (4), *Token Holding Value*, is the logarithm of one plus the average dollar value of tokens that have been held by the delegate and mentioned in discussion posts. In Model (5) and (6), *Token Portfolio Weight*, is the average portfolio ratio of the dollar value of tokens held by the delegate and mentioned in discussion posts. In Model (7) and (8), *Topic Experience*, is the ratio of the number of correct votes a delegate has cast to the total number of votes they have participated in on proposals with the same tags as the current proposal. For proposals with multiple tags, we calculate the average count. Definitions of the variables are in Appendix. Delegate individual fixed effects are used in Model (1), (3), (5) and (7). Year-month fixed effects are added in Model (2), (4), (6) and (8). T-statistics adjusted for heteroscedasticity and clustered at delegate level are reported in parentheses. *, ** and *** denote statistical significance at 10%, 5% and 1% level, respectively.

Dep. Var.	Vote Early							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Token Experience	**0.068*****	**0.048***						
	(2.84)	**(1.77)**						
Token Holding Value			**0.007*****	**0.005****				
			(3.02)	**(2.10)**				
Token Portfolio Weight					**0.037**	**0.017**		
					(1.40)	**(0.60)**		
Topic Experience							**0.009**	**0.026**
							(0.29)	**(0.94)**
High Impact	-0.023	0.014	-0.024	0.013	-0.023	0.015	0.016	0.021**
	(-1.04)	(0.85)	(-1.13)	(0.79)	(-1.03)	(0.86)	(1.39)	(2.08)
Days to Expire	0.000	0.000	0.000	0.000	0.000	0.000	-0.000	0.000
	(1.44)	(0.61)	(1.43)	(0.61)	(1.43)	(0.60)	(-0.86)	(1.17)

Dep. Var.	Vote Early							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
MKR Holding Value	0.014***	0.004	0.013***	0.003	0.014***	0.003	-0.000	0.000
	(4.52)	(0.51)	(4.62)	(0.50)	(4.45)	(0.49)	(-0.02)	(0.06)
Voting Power	-0.003	-0.001	-0.003	-0.001	-0.003	-0.001	0.001	-0.001
	(-0.86)	(-0.21)	(-0.84)	(-0.19)	(-0.86)	(-0.19)	(0.86)	(-1.22)
Num of Delegators	0.012	0.010	0.012	0.010	0.011	0.010	0.003	0.004
	(1.56)	(1.41)	(1.56)	(1.41)	(1.54)	(1.38)	(1.11)	(1.22)
Constant	0.349***	0.389***	0.346***	0.385***	0.350***	0.391***	0.474***	0.432***
	(4.36)	(6.03)	(4.36)	(5.93)	(4.38)	(6.04)	(14.04)	(15.23)
Month FE	No	Yes	No	Yes	No	Yes	No	Yes
Delegate FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	1469	1468	1469	1468	1469	1468	5834	5834
Adj. R^2	0.328	0.382	0.330	0.383	0.327	0.381	0.297	0.351
vce	Delegate	Delegate	Delegate	Delegate	Delegate	Delegate	Delegate	Delegate

Table 9
Delegate vote correctness and future MKR returns

The table presents the weekly regressions of MKR returns on the prior week's average delegate vote correctness. The dependent variable is *Weekly Abnormal Returns* of MKR, defined as the residual from a factor model. The 1F specification indicates that the abnormal returns (both the weekly and the daily used to define voting correctness) are residuals from Crypto-CAPM model with market factor CMKT. The 2F and 3F specifications indicate that the abnormal returns are computed from two-factor (CMKT+CSMB) and three-factor (CMKT+CSMB+CMOM) models, respectively. The main independent variable is last week's *Delegates' Correctness*, measured as the voting-power weighted average of delegates' voting correctness in the prior week. Model (5) adds *Ordinary Voters' Correctness* - constructed analogously for non-delegate voters to isolate the effect of delegates' correctness. Definitions of the variables are in Appendix. Month fixed effect is included. T-statistics adjusted for heteroscedasticity are reported in parentheses. *, ** and *** denote statistical significance at 10%, 5% and 1% level, respectively.

Dep. Var.	Weekly Abnormal Returns			
	1F	2F	3F	1F
	(1)	(2)	(3)	(4)
Delegates' Correctness	**0.081*****	**0.078*****	**0.079*****	**0.067***
	(3.02)	**(2.74)**	**(2.95)**	**(1.81)**
Last Week Abnormal Returns	-0.034	-0.036	-0.044	-0.018
	(-0.41)	(-0.43)	(-0.55)	(-0.22)
Num of Polls	-0.003	-0.002	-0.002	-0.003
	(-0.46)	(-0.28)	(-0.29)	(-0.46)
Num of Votes	-0.000	-0.000	-0.000	-0.000
	(-0.32)	(-0.33)	(-0.24)	(-0.28)
Num of High Impact	-0.001	-0.002	-0.000	-0.000
	(-0.05)	(-0.16)	(-0.04)	(-0.04)
Ordinary Voters' Correctness				0.012
				(0.33)
Constant	-0.018	-0.016	-0.022	-0.017
	(-0.68)	(-0.59)	(-0.79)	(-0.64)
Month FE	Yes	Yes	Yes	Yes
Observations	130	130	130	128
R^2	0.319	0.310	0.311	0.327
vce	Robust	Robust	Robust	Robust

Table 10
Delegate vote correctness and future TVL Growth

The table presents the regressions of TVL (Total Value Locked) growth over the next 2 weeks on current week's average delegate vote correctness. The dependent variable is TVL Growth [0,+2], calculated as $(TVL_{t+2}-TVL_t)/TVL_t$. The main independent variable is current week's Delegates' $Correctness_t$, measured as the voting-power weighted average of delegates' voting correctness in the prior week. Model (5) adds Ordinary Voters' Correctness - constructed analogously for non-delegate voters to isolate the effect of delegates' correctness. Definitions of the variables are in Appendix. Month fixed effect is included. T-statistics adjusted for heteroscedasticity are reported in parentheses. *, ** and *** denote statistical significance at 10%, 5% and 1% level, respectively.

Dep. Var.	TVL Growth [0,+2]			
	1F	2F	3F	1F
	(1)	(2)	(3)	(4)
Delegates' Correctness	**0.028****	**0.029****	**0.027***	**0.038**
	(2.14)	**(2.14)**	**(1.90)**	**(1.58)**
Num of Polls	-0.002	-0.001	-0.001	-0.002
	(-0.65)	(-0.50)	(-0.61)	(-0.64)
Num of Votes	0.000	0.000	0.000	0.000
	(0.08)	(0.05)	(0.02)	(0.02)
Num of High Impact	0.004	0.004	0.005	0.004
	(1.16)	(1.07)	(1.24)	(1.20)
Ordinary Voters' Correctness				-0.011
				(-0.48)
Constant	-0.032**	-0.034**	-0.033**	-0.032**
	(-2.18)	(-2.21)	(-2.07)	(-2.11)
Month FE	Yes	Yes	Yes	Yes
Observations	130	130	130	128
R^2	0.462	0.462	0.458	0.466
vce	Robust	Robust	Robust	Robust

Table 11
Token holder preferences and delegation decisions

The table presents the MKR holder-poll level regression of MKR holders' decisions to delegate their votes or to vote by themselves. The dependent variable in Model (1) to (3) is *Delegate*, which is equal to 1 if the MKR holder chooses to delegate for current proposal voting and 0 if he chooses to vote by himself. In Model (4) to (6), the dependent variable is *Delegation Ratio*, which is the ratio of delegated MKR tokens over the total number of MKR tokens the holder has for current proposal voting. *Conflicted Holding Value* is the natural logarithm of one plus the dollar value of conflicted token holdings. *MKR Holding Value*, is the natural logarithm of the investor's dollar value of MKR holdings. Definitions of the variables are in Appendix. Poll fixed effects are included in all models. T-statistics adjusted for heteroscedasticity and clustered at the MKR holder level are reported in parentheses. *, ** and *** denote statistical significance at 10%, 5% and 1% level, respectively.

Dep. Var.	Delegate			Delegation Ratio		
	(1)	(2)	(3)	(4)	(5)	(6)
Conflicted Holding Value	**-0.013****		**-0.013****	**-0.013****		**-0.013****
	(-2.35)		**(-2.36)**	**(-2.29)**		**(-2.30)**
MKR Holding Value		**0.016*****	**0.016*****		**0.016*****	**0.016*****
		(7.64)	**(7.64)**		**(7.48)**	**(7.48)**
Voting Experience	-0.303***	-0.286***	-0.286***	-0.307***	-0.291***	-0.291***
	(-19.90)	(-20.54)	(-20.54)	(-20.27)	(-20.90)	(-20.90)
Num of Tokens	0.013	0.016**	0.017**	0.013	0.016**	0.017**
	(1.59)	(1.98)	(2.11)	(1.62)	(1.99)	(2.13)
Constant	0.870***	0.734***	0.734***	0.867***	0.733***	0.733***
	(41.38)	(24.20)	(24.23)	(40.29)	(24.08)	(24.10)
Poll FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	30735	30735	30735	30735	30735	30735
Adj. R^2	0.546	0.572	0.573	0.555	0.580	0.580
vce	Holder	Holder	Holder	Holder	Holder	Holder

Appendix: Variable Definition

Variable	Definition
Delegate-Vote Date Level:	
Correct Vote	The proportion of a delegate's votes that align with the proposal's perceived value, calculated as the number of correct votes divided by the total number of proposals the delegate participates in on the vote date.
MKR Increase	An ordinal variable taking the value 1 if the change in delegated MKR tokens during the 30 days following the focal delegate's vote is negative, 2 if it is zero, and 3 if it is positive.
Delegator Increase	An ordinal variable that equals 1 if the net number of MKR holders delegating to the focal delegate decreases in the 30 days after the vote, 2 if it remains unchanged, and 3 if it increases.
Delegate Growth	The growth rate of delegated MKR tokens over the 30-day period, calculated as the net change in the number of MKR tokens delegated, divided by the delegate's total MKR tokens on the vote date. It is winsorized at the 10^{th} and 90^{th} percentiles.
Num of Delegators	The number of MKR token holders who have delegated their voting rights to the delegate prior to the voting event.
Participation	The number of proposals a delegate votes on during the vote date.
Days to Expire	The number of days remaining from the current vote date until the delegate's delegation contract expires.
Num of High Impact	The number of proposals tagged as "High Impact" that a delegate votes on during the vote date.
Vote Early	The proportion of the voting period remaining after the delegate casts votes. It is calculated as the ratio of the time between the delegate's vote and the end of the voting period to the total duration of the voting period.
MKR Holding Value	The natural logarithm of one plus the dollar value of the investor's MKR holdings on the vote date.
Delegate-Poll Level:	
Correct	A dummy variable that equals one if the delegate casts a correct vote.
Topic Experience	The ratio of the number of correct votes a delegate has cast to the total number of votes they have participated in on proposals with the same non-impact-related tags (excluding High/Medium/Low Impact classifications) as the current proposal. For multi-tagged proposals, contributions are averaged across all relevant tags.
Token Experience	The ratio of "expertise tokens" to the delegate's total historical token portfolio, excluding current holdings. "Expertise tokens" are those tokens mentioned in the proposal discussion that the delegate previously holds. A token is considered mentioned if its full name (for single-word tokens) or at least two parts of its name (for multi-word tokens) appear in the discussion. ETH, MKR and all stablecoins are not considered as expertise tokens.
Token Holding Value	The natural logarithm of one plus the average value of tokens mentioned in the proposal that the delegate historically holds. This average is calculated as the mean daily dollar value of these tokens during the delegate's ownership period prior to the vote.

Token Portfolio Weight	The average percentage of the dollar value of tokens held by the delegate and mentioned in discussion posts. For each token, this percentage is calculated as the historical mean of the daily ratio of its dollar value to the total value of all token holdings.
Conflicted Holding Value	The natural logarithm of the dollar value of the interest-conflicted tokens held by the delegate on the vote date.
Aligned Holding Value	The natural logarithm of the dollar value of the interest-aligned tokens held by the delegate on the vote date.
Conflicted Dummy	A dummy variable that equals 1 if the delegate holds any interest-conflicted tokens on the vote date.
Aligned Dummy	A dummy variable that equals 1 if the delegate holds any interest-aligned tokens (exclude MKR) on the vote date.
Conflicted Number	The count of tokens in the delegate's holdings on the vote date that are conflicted with the interests of MakerDAO.
Aligned Number	The count of tokens in the delegate's holdings on the vote date that are aligned with the interests of MakerDAO.
Conflicted Ratio	The proportion of interest-conflicted tokens in the delegate's portfolio on the vote date, calculated by dividing the *Conflicted Number* by the total number of tokens held by the delegate.
Aligned Ratio	The proportion of interest-aligned tokens in the delegate's portfolio on the vote date, calculated by dividing the *Aligned Number* by the total number of tokens held by the delegate.
Voting Power (%)	The proportion of all tokens voted in a proposal that are controlled by the delegate.
Weekly Level:	
Abnormal Return	The weekly risk-adjusted excess return of MKR, calculated as the residual from the Cryptocurrency Capital Asset Pricing Model (Crypto-CAPM), $r_{i,t} - r_{f,t} = \alpha_i + \beta_i \, CMKT_t + \epsilon_i$, following Liu, Tsyvinski, and Wu (2022).
TVL Growth [0,+2]	The growth rate of TVL (Total Value Locked) in Maker in the following two weeks, calculated as $(TVL_{t+2}\text{-}TVL_t)/TVL_t$.
Delegates' Correctness	A weekly measure of delegates governance accuracy. It is calculated by weighting delegates' *Correct Vote* by their delegated MKR holdings, then averaging across all delegates.
Ordinary MKR Voters' Correctness	A weekly measure of governance accuracy. It is calculated by weighting ordinary MKR voters' *Correct Vote* by their MKR holdings, then averaging across all ordinary MKR voters.
Num of Votes	The total count of votes cast by both delegates and ordinary MKR holders during a week.
Num of Polls	The total count of proposals that are actively under voting during a week.
Num of High Impact	The count of proposals tagged as "High Impact" that are under voting during a week.

Variable	Definition
MKR Holder-Poll Level:	
Delegate	A dummy variable that equals 1 if the MKR holder chooses to delegate to vote under proposal p and 0 if he chooses to vote by himself.
Delegation Ratio	The ratio of MKR tokens delegated to the total MKR tokens held by the MKR investor.
Num of Tokens	The natural logarithm of one plus the number of distinct tokens (excluding ETH and MKR) held in the investor's account at the time of voting on the current proposal.
Voting Experience	The natural logarithm of one plus the number of poll votes in which the focal MKR investor has personally participated prior to voting on the current proposal.

Internet Appendix for "Is There Wisdom Among the DAO Crowd? Evidence from Vote Delegation"

Chuxuan (Anna) Fan

Tao Shu

Fei Xie

ABSTRACT

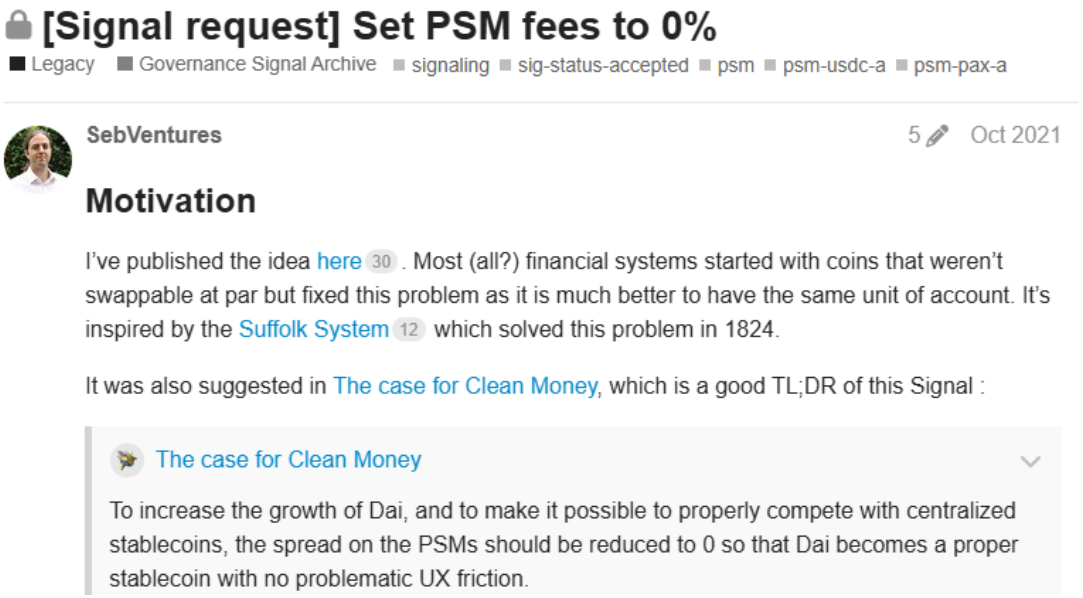
This internet appendix supplements the main article. Section I presents additional results supporting those reported in the paper. Section II presents the validation tests for the classification of value-enhancing vs. value-destroying proposals. Section III describes the background of governance changes at MakerDAO in April 2023.

I. Additional Figures and Tables

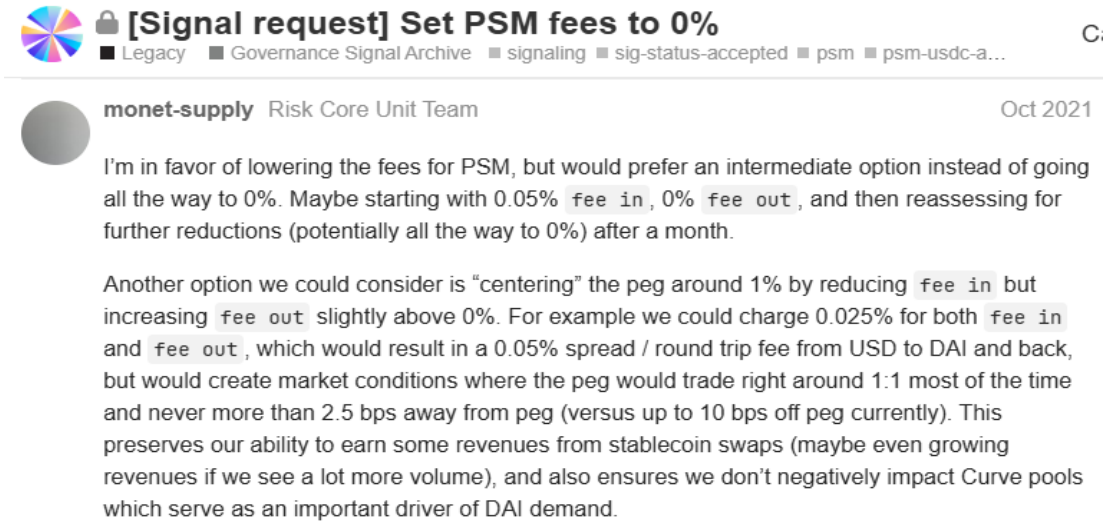
Figure IA.1
MakerDAO governance process and web interface: An example

This figure illustrates an example of the MakerDAO governance process as displayed on the web interface, outlining the sequential decision-making stages. Panel A depicts *Proposal Submission*, where SebVentures submits a proposal to reduce swap fees of PSM-USDC and PSM-USDP vaults to 0%. Panel B represents *Forum Discussion*, during which community members provide questions, comments, and feedback. Panel C illustrates *Poll Voting*, where the proposal receives 63.12% support, with a total of 54,365.756 MKR votes cast. Panel D shows *Executive Voting*, in which the approved proposal undergoes a final governance vote that includes a detailed implementation plan. Panel E depicts *Implementation*, where the proposal is executed in a new smart contract.

Panel A: Proposal Submission



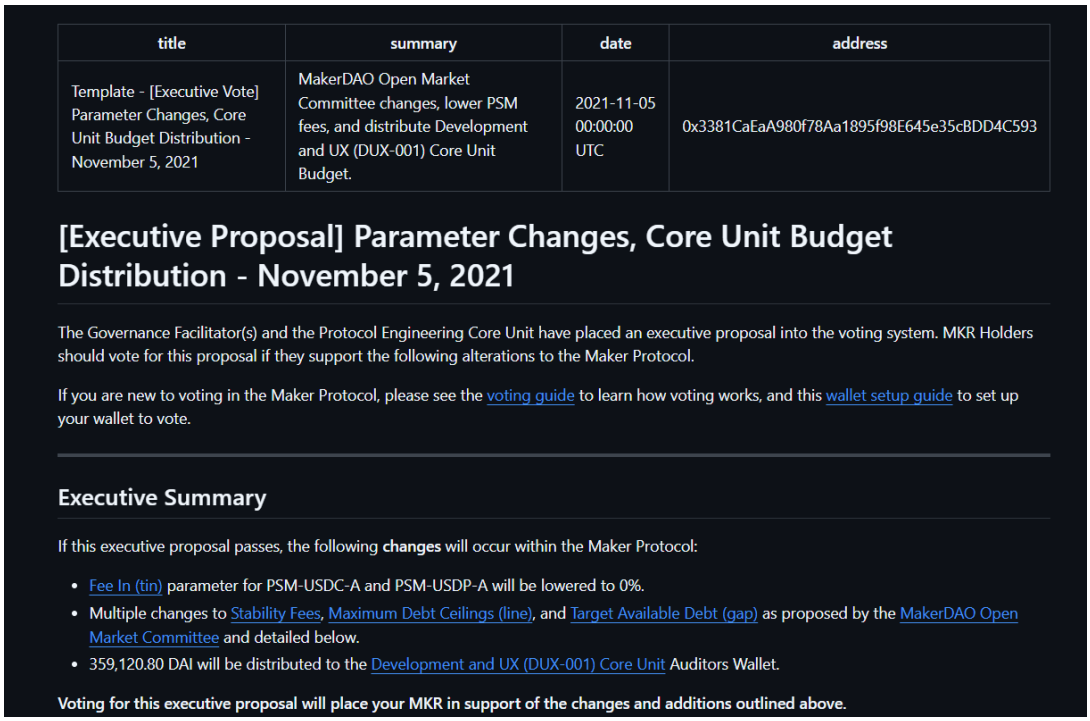
Panel B: Forum Discussion



Panel C: Poll Voting



Panel D: Executive Voting



title	summary	date	address
Template - [Executive Vote] Parameter Changes, Core Unit Budget Distribution - November 5, 2021	MakerDAO Open Market Committee changes, lower PSM fees, and distribute Development and UX (DUX-001) Core Unit Budget.	2021-11-05 00:00:00 UTC	0x3381CaEaA980f78Aa1895f98E645e35cBDD4C593

[Executive Proposal] Parameter Changes, Core Unit Budget Distribution - November 5, 2021

The Governance Facilitator(s) and the Protocol Engineering Core Unit have placed an executive proposal into the voting system. MKR Holders should vote for this proposal if they support the following alterations to the Maker Protocol.

If you are new to voting in the Maker Protocol, please see the voting guide to learn how voting works, and this wallet setup guide to set up your wallet to vote.

Executive Summary

If this executive proposal passes, the following **changes** will occur within the Maker Protocol:

- Fee In (tin) parameter for PSM-USDC-A and PSM-USDP-A will be lowered to 0%.
- Multiple changes to Stability Fees, Maximum Debt Ceilings (line), and Target Available Debt (gap) as proposed by the MakerDAO Open Market Committee and detailed below.
- 359,120.80 DAI will be distributed to the Development and UX (DUX-001) Core Unit Auditors Wallet.

Voting for this executive proposal will place your MKR in support of the changes and additions outlined above.

(Continue on the next page)

Panel E: Implementation

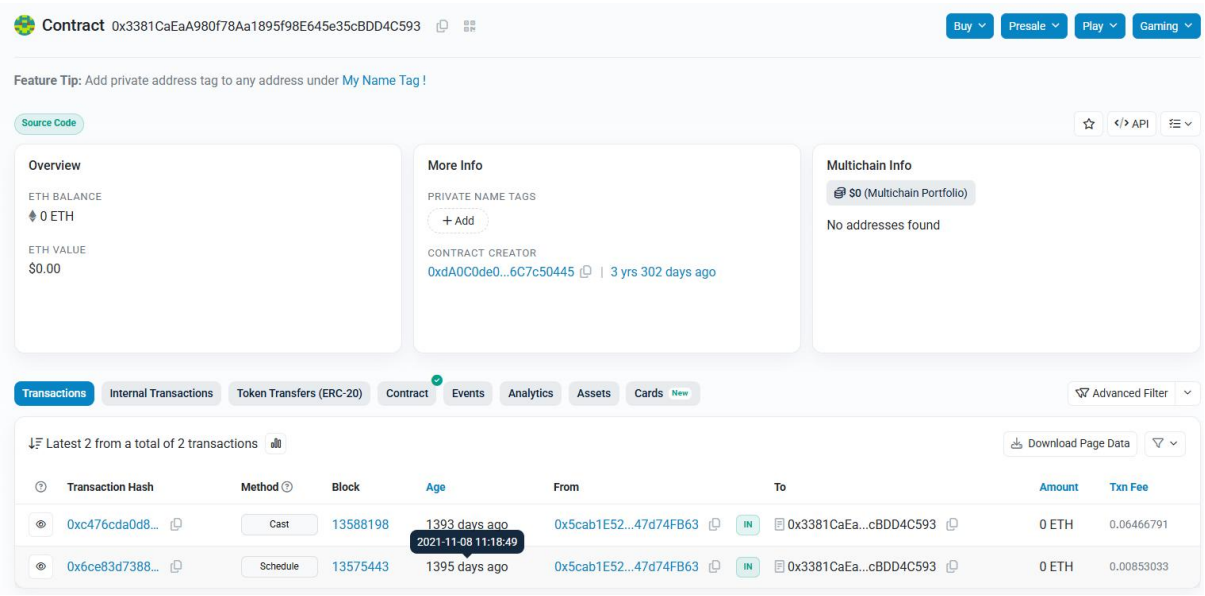


Figure IA.2
Voting participation across proposal topics

This figure depicts voting participation among MKR holders from October 2021 to March 2025, categorized by proposal topic tags. Participation is measured by the number of voters engaging in each proposal type. Proposals tagged as "Risk Parameter" attract the highest voter turnout. Other popular tags include "MIP" (Maker Improvement Proposals), "Ratification" (final approval of MIPs), and "Endgame" (a governance restructuring initiative aimed at decentralization and innovation).

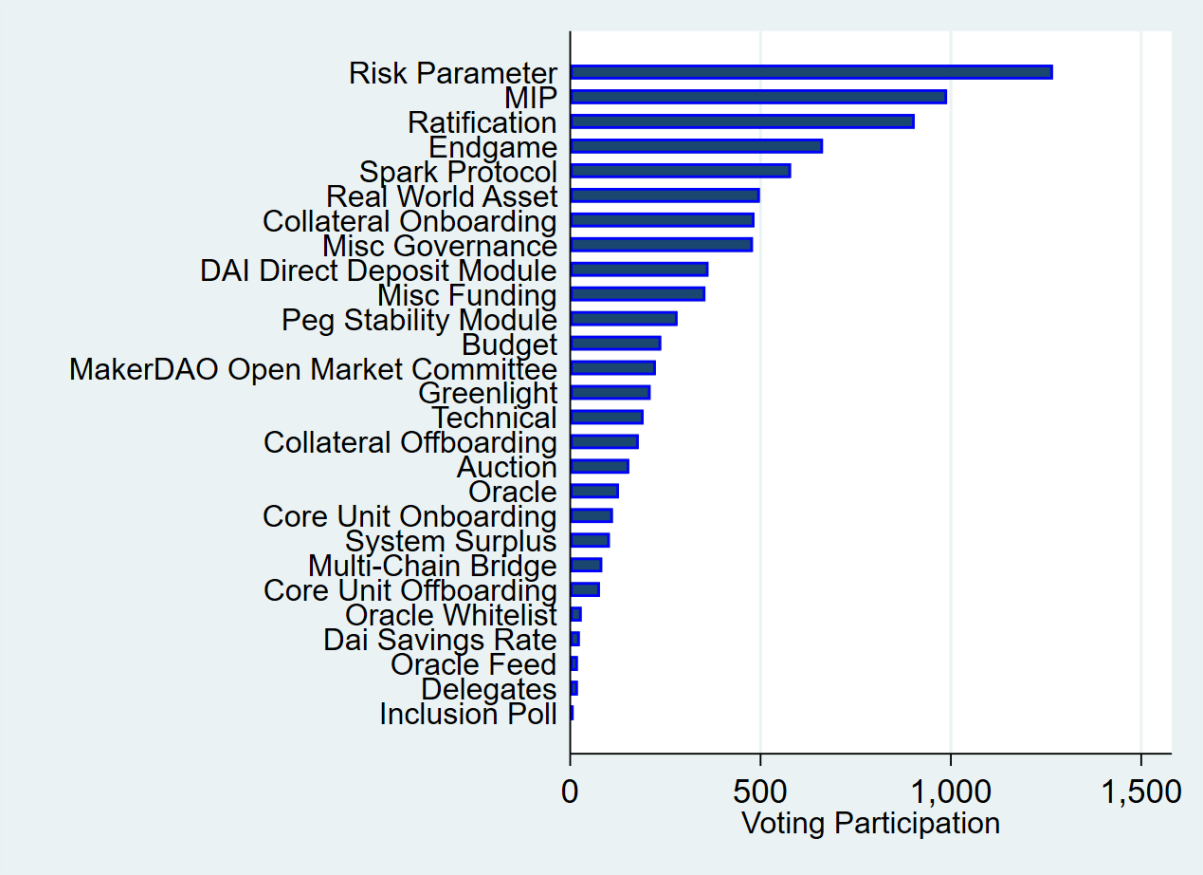


Table IA.1
Robustness test: OLS regression

This table presents OLS regression results for Column (1) to (4) in Table 3. Column (1) and (3) include delegate fixed effects and Column (2) and (4) add year-month fixed effects. T-statistics adjusted for heteroscedasticity and clustered at delegate level are reported in parentheses. *, ** and *** denote statistical significance at 10%, 5% and 1% level, respectively.

Dep. Var.	MKR Increase		Delegator Increase	
	(1)	(2)	(3)	(4)
Correct Vote	**0.064****	**0.065****	**0.085*****	**0.067****
	(2.29)	**(2.12)**	**(3.46)**	**(2.53)**
Days to Expire	0.002***	0.001***	0.002***	0.001***
	(6.83)	(5.63)	(7.06)	(5.96)
Participation	-0.004	-0.013*	-0.008	-0.012*
	(-0.46)	(-1.87)	(-1.00)	(-1.75)
Num of Delegators	-0.066***	-0.061***	-0.078***	-0.078***
	(-4.11)	(-3.82)	(-5.62)	(-4.50)
Num of High Impact	0.010	0.027***	0.023*	0.029***
	(0.76)	(2.90)	(1.73)	(3.22)
Voting Power	-0.013**	-0.011*	-0.003	0.001
	(-2.00)	(-1.96)	(-0.48)	(0.16)
MKR Holding Value	-0.034	-0.025	-0.013	-0.001
	(-1.40)	(-1.32)	(-0.42)	(-0.03)
Constant	2.196***	2.189***	2.219***	2.223***
	(22.00)	(25.39)	(26.87)	(28.47)
Month FE	No	Yes	No	Yes
Delegate FE	Yes	Yes	Yes	Yes
Observations	2427	2427	2427	2427
Adj. R^2	0.210	0.286	0.234	0.315
vce	Delegate	Delegate	Delegate	Delegate

Table IA.2
Robustness test: Alternative cryptocurrency factor model based on DeFi index

This table reports robustness tests replicating those in Table 3, but using a DeFi industry index in place of the crypto market index to estimate abnormal MKR returns. Column (1) to (4) are results from ordered logit regression, while Column (5) and (6) are OLS results. Column (1), (3) and (5) use delegate fixed effects and Column (2), (4) and (6) add year-month fixed effects. T-statistics adjusted for heteroscedasticity and clustered at delegate level are reported in parentheses. *, ** and *** denote statistical significance at 10%, 5% and 1% level, respectively.

Dep. Var.	MKR Increase		Delegator Increase		Delegate Growth	
	(1)	(2)	(3)	(4)	(5)	(6)
Correct Vote	0.168*	0.245**	0.209**	0.241**	0.020	0.037***
	(1.77)	(2.41)	(2.42)	(2.56)	(1.35)	(2.69)
Days to Expire	0.006***	0.006***	0.006***	0.006***	0.001***	0.001***
	(5.96)	(5.19)	(6.32)	(5.58)	(5.62)	(4.19)
Participation	-0.013	-0.042*	-0.032	-0.044*	0.004	-0.001
	(-0.49)	(-1.75)	(-1.06)	(-1.68)	(0.80)	(-0.29)
Num of Delegators	-0.271***	-0.266***	-0.336***	-0.377***	-0.031***	-0.021***
	(-2.90)	(-2.93)	(-3.77)	(-3.52)	(-3.84)	(-2.66)
Num of High Impact	0.021	0.083***	0.064	0.101***	-0.001	0.009*
	(0.47)	(2.60)	(1.40)	(2.89)	(-0.16)	(1.78)
Voting Power	-0.053**	-0.049**	-0.024	-0.008	-0.023***	-0.023***
	(-2.11)	(-2.10)	(-0.97)	(-0.34)	(-6.72)	(-7.52)
MKR Holding Value	-0.110	-0.080	-0.033	0.006	-0.017	-0.009
	(-1.18)	(-1.08)	(-0.25)	(0.05)	(-1.13)	(-0.75)
Month FE	No	Yes	No	Yes	No	Yes
Delegate FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	2476	2476	2476	2476	2427	2427
(Pseudo) Adj. R^2	0.166	0.218	0.189	0.250	0.295	0.366
vce	Delegate	Delegate	Delegate	Delegate	Delegate	Delegate

Table IA.3
Robustness test: Alternative cryptocurrency factor model or window for event returns

This table presents the robustness tests of Table 3. In this table, following Liu, Tsyvinski, and Wu (2022), we construct 2 additional factors: CSMB (small minus big) and CMOM (3-day momentum) to get the abnormal returns adjusted by 2-factor (Model (1), (4) and (7)) or 3-factor model (Model (2), (5) and (8)). Additionally, in Model (3), (6) and (9), we focus on a 2-day window after the pivotal vote date. Model (1) to (6) are ordered logit estimates while Molde (7) to (9) are from simple OLS. All models use delegate and year-month fixed effects. T-statistics adjusted for heteroscedasticity and clustered at delegate level are reported in parentheses. *, ** and *** denote statistical significance at 10%, 5% and 1% level, respectively.

Dep. Var.	MKR Increase			Delegator Increase			Delegate Growth		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Correct Ratio (2F)	**0.188***			**0.212****			**0.028***		
	(1.75)			**(2.04)**			**(1.83)**		
Correct Ratio (3F)		**0.183***			**0.165**			**0.030***	
		(1.65)			**(1.55)**			**(1.89)**	
Correct Ratio (1F, 2Days)			**0.109**			**0.075**			**0.026***
			(1.09)			**(0.74)**			**(1.74)**
Days to Expire	0.006***	0.006***	0.006***	0.006***	0.006***	0.006***	0.001***	0.001***	0.001***
	(5.20)	(5.20)	(5.18)	(5.59)	(5.57)	(5.56)	(4.14)	(4.14)	(4.14)
Participation	-0.045*	-0.045*	-0.041*	-0.048*	-0.047*	-0.044*	-0.002	-0.002	-0.001
	(-1.86)	(-1.87)	(-1.74)	(-1.82)	(-1.80)	(-1.68)	(-0.43)	(-0.46)	(-0.32)
Num of Delegators	-0.265***	-0.265***	-0.265***	-0.376***	-0.375***	-0.374***	-0.022***	-0.022***	-0.022***
	(-2.93)	(-2.93)	(-2.91)	(-3.53)	(-3.53)	(-3.51)	(-2.63)	(-2.63)	(-2.62)
Num of High Impact	0.091***	0.092***	0.088***	0.111***	0.110***	0.105***	0.010**	0.011**	0.010*
	(2.79)	(2.79)	(2.74)	(3.14)	(3.10)	(3.02)	(2.01)	(2.06)	(1.97)
Voting Power	-0.049**	-0.048**	-0.049**	-0.007	-0.007	-0.008	-0.024***	-0.024***	-0.024***
	(-2.06)	(-2.05)	(-2.08)	(-0.30)	(-0.30)	(-0.33)	(-7.43)	(-7.41)	(-7.43)
MKR Holding Value	-0.078	-0.077	-0.077	0.009	0.009	0.010	-0.009	-0.009	-0.009
	(-1.05)	(-1.05)	(-1.05)	(0.07)	(0.08)	(0.08)	(-0.75)	(-0.75)	(-0.74)
Month FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Delegate FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	2476	2476	2476	2476	2476	2476	2427	2427	2427
(Pseudo) Adj. R^2	0.218	0.217	0.217	0.249	0.249	0.249	0.366	0.366	0.366
vce	Delegate	Delegate	Delegate	Delegate	Delegate	Delegate	Delegate	Delegate	Delegate

Table IA.4
Robustness test: Alternative window to construct *Correct Vote*

This table presents the robustness tests of Table 3. Instead of using the market reaction at the pivotal vote date to construct Correct Vote, we focus on a longer window. In Model (1) to (3), we observe the market reaction from the poll voting start to end. In Model (4) to (6), the market reaction is observed from the proposal discussion start to vote end. Model (1), (2), (4) and (5) are ordered logit estimates while Model (3) and (6) is simple OLS estimates. All models use delegate individual and year-month fixed effects. T-statistics adjusted for heteroscedasticity and clustered at delegate level are reported in parentheses. *, ** and *** denote statistical significance at 10%, 5% and 1% level, respectively.

Dep. Var.	MKR Increase	Delegator Increase	Delegate Growth	MKR Increase	Delegator Increase	Delegate Growth
Period	From Vote Start to End Date			From Discussion Start to Vote End Date		
	(1)	(2)	(3)	(4)	(5)	(6)
Correct Vote	**0.186***	**0.007**	**0.047*****	**0.295****	**0.166**	**0.053*****
	(1.75)	**(0.07)**	**(2.95)**	**(2.30)**	**(1.40)**	**(2.82)**
Days to Expire	0.006***	0.006***	0.001***	0.006***	0.006***	0.001***
	(5.18)	(5.55)	(4.19)	(5.21)	(5.57)	(4.17)
Participation	-0.041*	-0.043*	-0.001	-0.042*	-0.044*	-0.001
	(-1.75)	(-1.66)	(-0.37)	(-1.79)	(-1.68)	(-0.37)
Num of Delegators	-0.264***	-0.374***	-0.021***	-0.262***	-0.373***	-0.021***
	(-2.91)	(-3.52)	(-2.66)	(-2.89)	(-3.51)	(-2.61)
Num of High Impact	0.091***	0.101***	0.011**	0.087***	0.104***	0.009*
	(2.90)	(2.96)	(2.23)	(2.72)	(2.96)	(1.95)
Voting Power	-0.049**	-0.008	-0.023***	-0.050**	-0.008	-0.023***
	(-2.09)	(-0.33)	(-7.52)	(-2.12)	(-0.34)	(-7.53)
MKR Holding Value	-0.074	0.011	-0.007	-0.077	0.010	-0.008
	(-1.03)	(0.09)	(-0.66)	(-1.08)	(0.09)	(-0.71)
Month FE	Yes	Yes	Yes	Yes	Yes	Yes
Delegate FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	2476	2476	2427	2476	2476	2427
(Pseudo) Adj. R^2	0.217	0.249	0.367	0.218	0.249	0.367
vce	Delegate	Delegate	Delegate	Delegate	Delegate	Delegate

Table IA.5
Robustness test: Alternative measure of vote correctness

This table presents the robustness tests of Table 3. We use *Net Num of Correct Votes* as the main independent variable (instead of *Correct Vote*), which is defined as the number of correct votes minus the number of wrong votes. Model (1) and (2) are ordered logit estimates while Model (3) is simple OLS estimates. All models use delegate and year-month fixed effects. T-statistics adjusted for heteroscedasticity and clustered at delegate level are reported in parentheses. *, ** and *** denote statistical significance at 10%, 5% and 1% level, respectively.

Dep. Var.	MKR Increase	Delegator Increase	Delegate Growth
	(1)	(2)	(3)
Net Num of Correct Votes	**0.042*****	**0.037****	**0.004***
	(2.76)	**(2.35)**	**(1.73)**
Days to Expire	0.006***	0.006***	0.001***
	(5.25)	(5.63)	(4.16)
Participation	-0.042*	-0.045*	-0.001
	(-1.80)	(-1.70)	(-0.35)
Num of Delegators	-0.264***	-0.374***	-0.022***
	(-2.92)	(-3.52)	(-2.62)
Num of High Impact	0.098***	0.114***	0.011**
	(3.09)	(3.31)	(2.11)
Voting Power	-0.049**	-0.008	-0.024***
	(-2.07)	(-0.31)	(-7.46)
MKR Holding Value	-0.078	0.009	-0.009
	(-1.07)	(0.08)	(-0.76)
Month FE	Yes	Yes	Yes
Delegate FE	Yes	Yes	Yes
Observations	2476	2476	2427
(Pseudo) Adj. R^2	0.218	0.249	0.366
vce	Delegate	Delegate	Delegate

Table IA.6

Robustness test: Subperiod after the implementation of the new delegate scheme

This table presents the robustness tests of Table 3 by focusing on a subperiod which starts from April, 2023 when MakerDAO starts a new delegation scheme. Model (1) and (2) are ordered logit estimates while Model (3) is simple OLS estimates. All models use delegate individual and year-month fixed effects. T-statistics adjusted for heteroscedasticity and clustered at delegate level are reported in parentheses. *, ** and *** denote statistical significance at 10%, 5% and 1% level, respectively.

Dep. Var.	MKR Increase	Delegator Increase	Delegate Growth
	(1)	(2)	(3)
Correct Vote	**0.264***	**0.413*****	**0.051****
	(1.85)	**(2.79)**	**(2.42)**
Days to Expire	0.004***	0.005***	0.001***
	(2.97)	(3.51)	(2.83)
Participation	-0.050	-0.085	0.020
	(-0.70)	(-1.10)	(1.54)
Num of Delegators	-0.300*	-0.430	-0.009
	(-1.80)	(-1.52)	(-0.68)
Num of High Impact	0.138	0.204**	-0.009
	(1.62)	(2.20)	(-0.70)
Voting Power	-0.115**	-0.075**	-0.027***
	(-2.51)	(-2.00)	(-5.59)
MKR Holding Value	-0.074***	-0.082***	-0.015***
	(-2.83)	(-2.99)	(-3.14)
Month FE	Yes	Yes	Yes
Delegate FE	Yes	Yes	Yes
Observations	1140	1140	1124
(Pseudo) Adj. R^2	0.242	0.308	0.318
vce	Delegate	Delegate	Delegate

Table IA.7
Robustness test: Excluding polls determined by a single voter

This table presents the robustness tests of Table 3 by excluding the polls determined by a single voter. Model (1), (2), (3) and (4) are ordered logit estimates while Model (5) and (6) are simple OLS estimates. Model (1), (3) and (5) include delegate fixed effects and year-month fixed effects are added in (2), (4) and (6). T-statistics adjusted for heteroscedasticity and clustered at delegate level are reported in parentheses. *, ** and *** denote statistical significance at 10%, 5% and 1% level, respectively.

Dep. Var.	MKR Increase		Delegator Increase		Delegate Growth	
	(1)	(2)	(3)	(4)	(5)	(6)
Correct Vote	**0.173****	**0.194***	**0.250*****	**0.224****	**0.026***	**0.027***
	(1.96)	**(1.81)**	**(2.94)**	**(2.14)**	**(1.84)**	**(1.80)**
Days to Expire	0.006***	0.006***	0.006***	0.006***	0.001***	0.001***
	(6.03)	(5.28)	(6.29)	(5.59)	(5.64)	(4.24)
Participation	-0.016	-0.048**	-0.035	-0.049*	0.003	-0.002
	(-0.61)	(-1.98)	(-1.17)	(-1.87)	(0.71)	(-0.47)
Num of Delegators	-0.274***	-0.263***	-0.334***	-0.368***	-0.031***	-0.021***
	(-2.85)	(-2.88)	(-3.76)	(-3.50)	(-3.89)	(-2.68)
Num of High Impact	0.034	0.102***	0.083*	0.118***	0.001	0.011**
	(0.75)	(3.03)	(1.77)	(3.24)	(0.10)	(2.09)
Voting Power	-0.053**	-0.049**	-0.024	-0.008	-0.025***	-0.024***
	(-2.06)	(-2.01)	(-0.96)	(-0.35)	(-7.38)	(-7.86)
MKR Holding Value	-0.106	-0.078	-0.029	0.008	-0.019	-0.009
	(-1.13)	(-1.05)	(-0.22)	(0.07)	(-1.24)	(-0.84)
Month FE	No	Yes	No	Yes	No	Yes
Delegate FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	2438	2438	2438	2438	2388	2388
(Pseudo) Adj. R^2	0.167	0.220	0.186	0.246	0.300	0.369
vce	Delegate	Delegate	Delegate	Delegate	Delegate	Delegate

Table IA.8
Robustness test: Using actual total votes as benchmark

This table presents the robustness tests of Table 3. Instead of using ex-ante previous one-month voting participation as benchmark, we use actual total votes for each poll as the benchmark to define Correctness. Model (1), (2), (3) and (4) are ordered logit estimates while Model (5) and (6) are simple OLS estimates. Model (1), (3) and (5) include delegate fixed effects and year-month fixed effects are added in (2), (4) and (6). T-statistics adjusted for heteroscedasticity and clustered at delegate level are reported in parentheses. *, ** and *** denote statistical significance at 10%, 5% and 1% level, respectively.

Dep. Var.	MKR Increase		Delegator Increase		Delegate Growth	
	(1)	(2)	(3)	(4)	(5)	(6)
Correct Vote	**0.186****	**0.265*****	**0.266*****	**0.294*****	**0.023***	**0.029****
	(2.55)	**(2.80)**	**(3.49)**	**(3.16)**	**(1.78)**	**(2.16)**
Days to Expire	0.006***	0.006***	0.006***	0.006***	0.001***	0.001***
	(5.98)	(5.39)	(6.49)	(5.96)	(5.62)	(4.27)
Participation	-0.013	-0.038	-0.043	-0.040	0.003	-0.001
	(-0.40)	(-1.33)	(-1.34)	(-1.45)	(0.59)	(-0.35)
Num of Delegators	-0.265***	-0.252***	-0.320***	-0.348***	-0.028***	-0.019***
	(-2.72)	(-2.63)	(-3.37)	(-3.09)	(-3.78)	(-2.74)
Num of High Impact	0.056	0.084**	0.108**	0.104***	0.002	0.008
	(1.14)	(2.22)	(2.30)	(2.85)	(0.24)	(1.61)
Voting Power	-0.048*	-0.040	-0.015	0.008	-0.021***	-0.020***
	(-1.77)	(-1.57)	(-0.59)	(0.32)	(-6.35)	(-7.29)
MKR Holding Value	-0.174*	-0.163**	-0.121	-0.096	-0.022	-0.014
	(-1.74)	(-2.01)	(-1.00)	(-0.94)	(-1.62)	(-1.22)
Month FE	No	Yes	No	Yes	No	Yes
Delegate FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	2506	2506	2506	2506	2459	2459
(Pseudo) Adj. R^2	0.164	0.218	0.185	0.247	0.271	0.344
vce	Delegate	Delegate	Delegate	Delegate	Delegate	Delegate

Table IA.9
Robustness test: Excluding polls with small market reaction

This table presents the robustness tests of Table 3 by excluding those polls with small market reactions. In Panel A. we drop polls within the mean +/- 0.1*one std. dev. of the daily return distribution. While in Panel B, we drop polls with abnormal returns in the range of [-0.5%, +0.5%]. Model (1), (2), (3) and (4) are ordered logit estimates while Model (5) and (6) are simple OLS estimates. Model (1), (3) and (5) include delegate fixed effects and year-month fixed effects are added in (2), (4) and (6). T-statistics adjusted for heteroscedasticity and clustered at delegate level are reported in parentheses. *, ** and *** denote statistical significance at 10%, 5% and 1% level, respectively.

Panel A: Excluding polls within the mean +/- 0.1*one std. dev. of the daily return distribution

Dep. Var.	MKR Increase		Delegator Increase		Delegate Growth	
	(1)	(2)	(3)	(4)	(5)	(6)
Correct Votes	**0.177***	**0.217***	**0.251*****	**0.245****	**0.030****	**0.037****
	(1.83)	**(1.83)**	**(2.69)**	**(2.17)**	**(1.98)**	**(2.41)**
Days to Expire	0.006***	0.006***	0.006***	0.006***	0.001***	0.001***
	(5.86)	(5.07)	(6.13)	(5.35)	(5.49)	(4.06)
Participation	-0.014	-0.053**	-0.030	-0.043	0.005	-0.001
	(-0.50)	(-2.22)	(-0.91)	(-1.54)	(0.99)	(-0.26)
Num of Delegators	-0.261***	-0.254***	-0.335***	-0.375***	-0.030***	-0.021**
	(-2.88)	(-2.74)	(-3.73)	(-3.18)	(-3.61)	(-2.48)
Num of High Impact	0.029	0.098***	0.075	0.101***	-0.002	0.009
	(0.61)	(2.81)	(1.51)	(2.62)	(-0.23)	(1.61)
Voting Power	-0.056**	-0.051**	-0.029	-0.012	-0.023***	-0.023***
	(-2.20)	(-2.06)	(-1.13)	(-0.46)	(-6.79)	(-7.39)
MKR Holding Value	-0.107	-0.074	-0.031	0.009	-0.020	-0.011
	(-1.16)	(-1.04)	(-0.23)	(0.08)	(-1.21)	(-0.89)
Month FE	No	Yes	No	Yes	No	Yes
Delegate FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	2237	2237	2237	2237	2189	2189
(Pseudo) Adj. R^2	0.163	0.212	0.195	0.252	0.293	0.360
vce	Delegate	Delegate	Delegate	Delegate	Delegate	Delegate

Panel B: Excluding polls with abnormal returns in the range of [-0.5%, +0.5%]

Dep. Var.	MKR Increase		Delegator Increase		Delegate Growth	
	(1)	(2)	(3)	(4)	(5)	(6)
Correct Votes	**0.172***	**0.223***	**0.243*****	**0.204***	**0.033****	**0.037****
	(1.84)	**(1.94)**	**(2.66)**	**(1.92)**	**(2.12)**	**(2.41)**
Days to Expire	0.006***	0.006***	0.006***	0.006***	0.001***	0.001***
	(5.90)	(5.08)	(6.29)	(5.21)	(5.48)	(4.03)
Participation	-0.013	-0.050**	-0.016	-0.054*	0.005	-0.001
	(-0.45)	(-2.01)	(-0.56)	(-1.82)	(1.00)	(-0.21)
Num of Delegators	-0.257***	-0.254***	-0.332***	-0.354***	-0.029***	-0.020**
	(-2.95)	(-2.81)	(-3.92)	(-3.49)	(-3.58)	(-2.44)
Num of High Impact	0.029	0.092**	0.064	0.116***	-0.002	0.008
	(0.59)	(2.55)	(1.24)	(2.98)	(-0.23)	(1.54)
Voting Power	-0.058**	-0.054**	-0.037	-0.024	-0.024***	-0.023***
	(-2.26)	(-2.19)	(-1.45)	(-0.95)	(-6.78)	(-7.44)
MKR Holding Value	-0.110	-0.078	-0.033	0.014	-0.020	-0.011
	(-1.18)	(-1.11)	(-0.25)	(0.13)	(-1.24)	(-0.93)
Month FE	No	Yes	No	Yes	No	Yes
Delegate FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	2219	2219	2219	2219	2171	2171
(Pseudo) Adj. R^2	0.164	0.214	0.200	0.258	0.295	0.361
vce	Delegate	Delegate	Delegate	Delegate	Delegate	Delegate

Table IA.10
Robustness test: Placebo test

This table presents the placebo tests of Table 3. Rather than using the pivotal vote date defined for each poll voting, we construct the *Correct Vote* using the alternative days, including N days before the voting start date or N days after the voting end date, where N=1, 2…10. Model (1) and (2) are ordered logit estimates while Model (3) is simple OLS estimates. All models use delegate individual and year-month fixed effects. T-statistics adjusted for heteroscedasticity and clustered at delegate level are reported in parentheses. *, ** and *** denote statistical significance at 10%, 5% and 1% level, respectively.

Dep. Var.	MKR Increase	Delegator Increase	Delegate Growth
	(1)	(2)	(3)
StartDate-10 Days	-0.082	-0.056	0.002
	(-0.97)	(-0.57)	(0.18)
StartDate-9 Days	0.100	0.009	0.012
	(0.98)	(0.09)	(0.75)
StartDate-8 Days	0.166	-0.011	0.070***
	(1.38)	(-0.10)	(4.30)
StartDate-7 Days	-0.219**	-0.252**	-0.003
	(-1.98)	(-2.46)	(-0.19)
StartDate-6 Days	-0.023	0.006	-0.011
	(-0.22)	(0.06)	(-0.69)
StartDate-5 Days	0.129	0.012	0.022
	(1.35)	(0.12)	(1.47)
StartDate-4 Days	0.022	0.018	-0.000
	(0.20)	(0.17)	(-0.01)
StartDate-3 Days	-0.048	0.077	0.000
	(-0.53)	(0.72)	(0.02)
StartDate-2 Days	0.098	0.045	0.026*
	(0.95)	(0.50)	(1.73)
StartDate-1 Days	0.120	0.147	0.006
	(1.18)	(1.56)	(0.37)
EndDate+1 Days	-0.012	-0.030	-0.018
	(-0.15)	(-0.31)	(-1.29)
EndDate+2 Days	-0.086	0.066	-0.021*
	(-1.12)	(0.84)	(-1.85)
EndDate+3 Days	0.299***	0.277***	0.028*
	(3.03)	(3.00)	(1.68)
EndDate+4 Days	-0.098	-0.155	-0.008
	(-1.06)	(-1.64)	(-0.52)
EndDate+5 Days	-0.038	-0.149*	-0.015
	(-0.41)	(-1.86)	(-1.09)
EndDate+6 Days	0.009	0.090	-0.006
	(0.10)	(0.90)	(-0.40)
EndDate+7 Days	0.099	-0.028	-0.008
	(0.91)	(-0.26)	(-0.57)
EndDate+8 Days	-0.056	-0.076	0.008
	(-0.64)	(-0.75)	(0.59)
EndDate+9 Days	-0.079	-0.060	-0.025*
	(-0.83)	(-0.63)	(-1.79)
EndDate+10 Days	0.007	-0.057	-0.023*

	(0.08)	(-0.63)	(-1.86)
Controls	Yes	Yes	Yes
Month FE	Yes	Yes	Yes
Delegate FE	Yes	Yes	Yes
vce	Delegate	Delegate	Delegate

Table IA.11
Identification of interest-conflicted and -aligned tokens

This table presents seven examples of the relationship between MKR and a token *i*, either interest-conflicted, aligned or uncorrelated. For proposals A, B, and C, the market reactions of either MKR or token *i* on the pivotal vote date fall within 10% to 90% range of their corresponding distribution. This pattern suggests that MKR and token *i* are uncorrelated in the context of these proposals. For proposals D and E, both MKR and token *i* exhibit similarly extreme market reactions in either their respective lower or upper 10% ranges. This alignment in the market reactions implies that MKR and token *i* are interest-aligned under these proposals. For proposals F and G, the market reactions of MKR and token *i* are in opposite-extreme 10% of their distributions, suggesting conflicts of interest between MKR and token *i* under these proposals.

	Poll A	Poll B	Poll C	Poll D	Poll E	Poll F	Poll G
MKR Market Reaction	>10% and <90%	<10%	>10% and <90%	<10%	>90%	>90%	<10%
Token *i* Market Reaction	>90%	>90% and <10%	>10% and <90%	<10%	>90%	<10%	>90%
Interest-aligned/conflicted	Uncorrelated	Uncorrelated	Uncorrelated	Aligned	Aligned	Conflicted	Conflicted

Table IA.12
Robustness test: Using alternative measures for conflicted incentives

This table shows robustness test for Table 5. The regression is conducted on delegate-poll level. The dependent variable is *Correct* Dummy. The independent variables measure the potential incentives of delegates to cast votes. *Conflicted (Aligned) Dummy* is a dummy that equals 1 if the delegate holds any interest conflicted (aligned) tokens on the vote date. *Conflicted (Aligned) Number* is the number of conflicted (aligned) tokens held by the delegate on the vote date. *Conflicted (Aligned) Ratio* is *Conflicted Number* divided by the number of tokens held by the delegate on the vote date. Year-month fixed effect is included in Model (1), (3) and (5). Delegate fixed effects are included in Model (2), (4) and (6). T-statistics adjusted for heteroscedasticity and clustered at delegate level are reported in parentheses. *, ** and *** denote statistical significance at 10%, 5% and 1% level, respectively.

Dep. Var.	Correct					
	(1)	(2)	(3)	(4)	(5)	(6)
Conflicted Dummy	**-0.212*****	**-0.214*****				
	(-2.78)	**(-2.86)**				
Aligned Dummy	0.125*	0.066				
	(1.72)	(0.84)				
Num of Conflicted			**-0.145*****	**-0.160*****		
			(-3.18)	**(-3.63)**		
Num of Aligned			0.016	0.003		
			(0.60)	(0.12)		
Conflicted Ratio					**-0.305****	**-0.374*****
					(-2.56)	**(-3.17)**
Aligned Ratio					0.046	-0.045
					(0.49)	(-0.46)
High Impact	-0.008	0.034	-0.004	0.036	-0.005	0.038
	(-0.22)	(0.92)	(-0.13)	(1.00)	(-0.15)	(1.06)
Days to Expire	-0.000	0.001	-0.000	0.001	-0.000	0.001
	(-0.20)	(0.55)	(-0.16)	(0.59)	(-0.25)	(0.65)
Vote Early	-0.063	-0.045	-0.070	-0.051	-0.064	-0.046
	(-1.02)	(-0.75)	(-1.13)	(-0.84)	(-1.02)	(-0.76)
Num of Delegators	-0.017**	-0.014	-0.017**	-0.014	-0.017**	-0.014
	(-2.19)	(-1.63)	(-2.45)	(-1.64)	(-2.40)	(-1.63)
Voting Power	-0.000	0.002	-0.000	0.002	-0.000	0.001
	(-0.04)	(0.43)	(-0.06)	(0.41)	(-0.05)	(0.36)
MKR Holding Value	0.018**	0.032***	0.017**	0.031***	0.017**	0.031***
	(2.42)	(3.12)	(2.47)	(3.22)	(2.37)	(3.24)
Constant	0.574***	0.222	0.582***	0.214	0.583***	0.187
	(6.16)	(0.42)	(6.63)	(0.41)	(6.78)	(0.36)
Delegate FE	Yes	Yes	Yes	Yes	Yes	Yes
Month FE	No	Yes	No	Yes	No	Yes
Observations	1621	1619	1621	1619	1621	1619
Adj. R^2	0.055	0.136	0.052	0.136	0.052	0.136
vce	Delegate	Delegate	Delegate	Delegate	Delegate	Delegate

Table IA.13
Tokens referenced in the discussion forum threads

This Table lists the names of some tokens (excluding MKR, ETH and stablecoins) that are frequently mentioned in the MakerDAO proposal forum discussions, specifically those instances where the tokens' names are present. The mostly mentioned tokens include some decentralized exchange tokens like Uniswap and Curve. It also includes MakerDAO's competitors in DeFi lending platform like Aave, Compound, Morpho and Nexo. It also includes collateral tokens like Rocket Pool ETH, Matic and Gnosis.

Token Name	Type and Relationship with MakerDAO
Uniswap	Decentralized Exchange Uniswap's Governance Token
Aave Token	MakerDAO's Competitor in DeFi Lending
Ethereum Name Service	Decentralized Naming System ENS's Governance Token
Balancer Pool Token	Decentralized Exchange Balancer Liquidity Pool's Staking Share
Curve DAO Token	Decentralized Exchange Curve's Governance Token
Compound Dai	Interest Bearing Token of DAI issued by Compound
Rocket Pool ETH	Wrapped Token. Collateral on MakerDAO
ETH Max Yield Index	Tokenized Cryptocurrency Index
ChainLink Token	Oracle. Update DAI and Collateral Market Price for MakerDAO
Compound	MakerDAO's Competitor in DeFi Lending
FIAT DAO Token	FIAT's Governance Token
Morpho Token	MakerDAO's Competitor in DeFi Lending
Staked Yearn CRV Vault	Yield-generating Vault Product from Yearn Finance
Matic Token	Polygon's native token. Collateral on MakerDAO
Nexo	MakerDAO's Competitor in DeFi Lending
Gnosis	Gnosis DAO's Governance Token. Collateral on MakerDAO

Table IA.14
Robustness test for table 6: Using two- or three-factor model to estimate abnormal returns

This table presents the robustness tests of Table 6. In this table, we define correct vote choice based on the abnormal returns adjusted by either 2-factor (Model (1) to (3)) or 3-factor model (Model (4) to (6)). Additionally, in Model (7), (8) and (9), we focus on a 2-day window after the pivotal vote date. All models use delegate and year-month fixed effects. T-statistics adjusted for heteroscedasticity and clustered at delegate level are reported in parentheses. *, ** and *** denote statistical significance at 10%, 5% and 1% level, respectively.

Dep. Var.	Correct								
	2F			3F			1F, 2 Days		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Token Experience	**0.161*** **			**0.148****			**0.109****		
	(2.79)			**(2.09)**			**(2.26)**		
Token Holding Value		**0.007*** **			**0.007****			**0.011*** **	
		(3.01)			**(2.62)**			**(3.71)**	
Token Portfolio Weight			**0.094*** **			**0.092****			**0.139*** **
			(3.93)			**(2.18)**			**(2.70)**
High Impact	0.031	0.030	0.031	0.037	0.036	0.037	0.060*	0.057*	0.059*
	(0.86)	(0.84)	(0.87)	(1.14)	(1.09)	(1.14)	(1.89)	(1.78)	(1.83)
Days to Expire	0.004	0.004	0.004	0.005**	0.005*	0.005**	0.003	0.003	0.003
	(1.66)	(1.62)	(1.66)	(2.02)	(1.98)	(2.02)	(1.26)	(1.27)	(1.30)
Vote Early	0.001	0.001	0.003	0.052	0.051	0.053	-0.028	-0.031	-0.028
	(0.01)	(0.01)	(0.03)	(0.52)	(0.51)	(0.53)	(-0.42)	(-0.47)	(-0.43)
Num of Delegators	0.017**	0.017**	0.017**	0.016*	0.016*	0.016*	0.018*	0.018*	0.018*
	(2.42)	(2.42)	(2.49)	(1.84)	(1.84)	(1.88)	(1.85)	(1.84)	(1.88)
Voting Power	-0.004	-0.003	-0.003	-0.006	-0.005	-0.005	-0.003	-0.003	-0.003
	(-0.56)	(-0.52)	(-0.53)	(-0.81)	(-0.78)	(-0.78)	(-0.64)	(-0.61)	(-0.62)
MKR Holding Value	-0.001	-0.002	-0.002	-0.003	-0.003	-0.003	-0.059***	-0.059***	-0.059***
	(-0.22)	(-0.27)	(-0.28)	(-0.48)	(-0.51)	(-0.53)	(-4.62)	(-4.62)	(-4.59)
Constant	-0.560	-0.548	-0.574	-0.785	-0.775	-0.800	-0.274	-0.270	-0.308
	(-1.06)	(-1.02)	(-1.07)	(-1.48)	(-1.45)	(-1.49)	(-0.58)	(-0.59)	(-0.65)
Month FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Delegate FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	1468	1468	1468	1468	1468	1468	1468	1468	1468
Adj. R^2	0.137	0.136	0.136	0.159	0.158	0.159	0.246	0.248	0.248
vce	Delegate	Delegate	Delegate	Delegate	Delegate	Delegate	Delegate	Delegate	Delegate

Table IA.15

Robustness test for table 7: Using two- or three-factor model to estimates abnormal returns

This table presents the robustness tests of Table 7 to test whether delegates with expertise on related topics can improve voting performance. In this table, we define correct vote choice based on the abnormal returns estimated by either 2-factor (Model (1)) or 3-factor model (Model (2)). Additionally, in Model (3), we focus on a 2-day window after the pivotal vote date. All models control for delegate and year-month fixed effects. T-statistics adjusted for heteroscedasticity and clustered at the delegate level are reported in parentheses. *, ** and *** denote statistical significance at 10%, 5% and 1% level, respectively.

Dep. Var.	Correct		
	2F	3F	1F, 2 Days
	(1)	(2)	(3)
Topic Experience	**0.076****	**0.061***	**0.061****
	(2.08)	**(1.68)**	**(2.02)**
High Impact	-0.091***	-0.095***	-0.049***
	(-4.38)	(-4.58)	(-2.86)
Days to Expire	0.000***	0.000**	0.000**
	(2.91)	(2.44)	(2.49)
Vote Early	-0.019	0.007	0.011
	(-0.45)	(0.16)	(0.34)
Num of Delegators	0.001	0.000	0.000
	(0.35)	(0.17)	(0.17)
Voting Power	0.001	0.001	0.001
	(0.89)	(0.50)	(1.19)
MKR Holding Value	0.017**	0.017**	0.004
	(2.36)	(2.58)	(0.30)
Constant	0.427***	0.433***	0.362***
	(13.30)	(13.39)	(12.55)
Month FE	Yes	Yes	Yes
Delegate FE	Yes	Yes	Yes
Observations	5834	5834	5834
Adj. R^2	0.172	0.178	0.274
vce	Delegate	Delegate	Delegate

II. Validation for the Classification of Value-Enhancing vs. Value-Destroying Proposals

Our approach for classifying proposals as value-enhancing or value-destroying is novel. To bolster the confidence in our approach, we conduct two validity checks: a case study and a text-based sentiment analysis.

For the case study, we revisit Poll 665, which proposes reducing swap transaction fees from DAI to USDC to zero. The swap system in MakerDAO, known as the Peg Stability Module (PSM), is a mechanism designed to maintain the stability of DAI's value by enabling direct swaps between DAI and other stablecoins, such as USDC, at a fixed exchange rate. Poll 665 aims to enhance the stability of DAI's peg to the US dollar by enabling seamless and cost-free swaps between USDC and DAI. However, this approach carries certain risks, particularly increased exposure to USDC, which is subject to censorship risk due to its reliance on centralized reserves to maintain its peg. Additionally, the elimination of fees could result in a reduction of revenue generated from PSM transactions. Thus, this proposal represents a strategic trade-off between enhancing liquidity and peg stability, and managing the associated risks from heightened exposure to centralized assets. As discussed in the previous section, our approach classifies this proposal as *value-enhancing*, given the prevailing "Yes" vote and the positive abnormal return of MKR on the pivotal vote date.

To evaluate the consequences of this proposal, a crypto analyst examines the performance of the Peg Stability Module (PSM) following the implementation of the proposal. As shown in Figure IA.3., there is a substantial rise in PSM volume, with daily inflows and outflows reaching historically high levels. This increase enhances liquidity and contributes to greater stability of the DAI peg, thereby confirming the realization of the intended benefits. Additionally, Figure IA.3. shows that the PSM balance experiences only a temporary decrease before recovering to its previous levels, indicating that net exposure to USDC is not as significant as initially anticipated.

Furthermore, Figure IA.4. shows that DAI's price peg remains stable, especially when compared to the fluctuations observed in the previous month, thus successfully achieving the proposal's primary objective of maintaining a 1:1 peg with the U.S. dollar. The analyst emphasizes that "the reduction in fees facilitates smoother arbitrage opportunities," which helps stabilize DAI's

price by aligning it more closely with its intended peg.[31] Therefore, these subsequent developments validate our classification of Poll 665 as value-enhancing.

To more systematically validate our classification approach, we analyze the sentiment of forum discussions related to each proposal. If a proposal is genuinely value-enhancing for MakerDAO, we would expect to observe positive sentiment in the corresponding discussion thread. To assess the sentiment, we utilize the GPT-O3 API, labeling each discussion post as positive, negative, or neutral. The specific prompt used for sentiment labeling is detailed in Table IA.16. Additionally, we request GPT-O3 to provide a rationale accompanying each classification. Table IA.17 presents three example posts from the discussion thread for Poll 665, showcasing positive, neutral, and negative sentiments, along with assigned labels and corresponding rationales.

To aggregate post-level sentiment to the proposal level, we first require that the proposal is labeled with a High-Impact tag, as such proposals typically attract more active discussion. Since individual discussants may comment multiple times, we first aggregate sentiments at the proposal-discussant level by calculating a simple average, representing each discussant's overall opinion about the proposal. We then average these discussant-level sentiments to derive an overall sentiment score at the proposal level. The sentiment score for Poll 665 is 0.67, indicating that it is generally viewed favorably by discussants as a value-enhancing proposal. The overall correlation between the proposal-level discussion sentiment and our binary classification (equal 1 for value-enhancing proposals and 0 for value-destroying proposals) is 34%, indicating that discussants' opinions tend to align with our classification approach.

[31] For more details, see a crypto analyst report at https://cryptobanking.network/the-history-of-a-dai-at-par-value/.

Figure IA.3
PSM inflows and outflows after execution of Poll 665

This figure illustrates the dynamics of the PSM (Peg Stability Module) surrounding Poll 665, specifically focusing on DAI inflows, outflows, and the resulting net balance (outflows minus inflows). The period around Poll 665 is characterized by a marked increase in PSM activity, with both DAI inflows and outflows experiencing substantial growth. While the surge in activity leads to a temporary dip in the net balance, indicating a period where outflows exceeded inflows, the net balance subsequently recovers towards its pre-poll level, suggesting an overall stabilization of the PSM following the event.

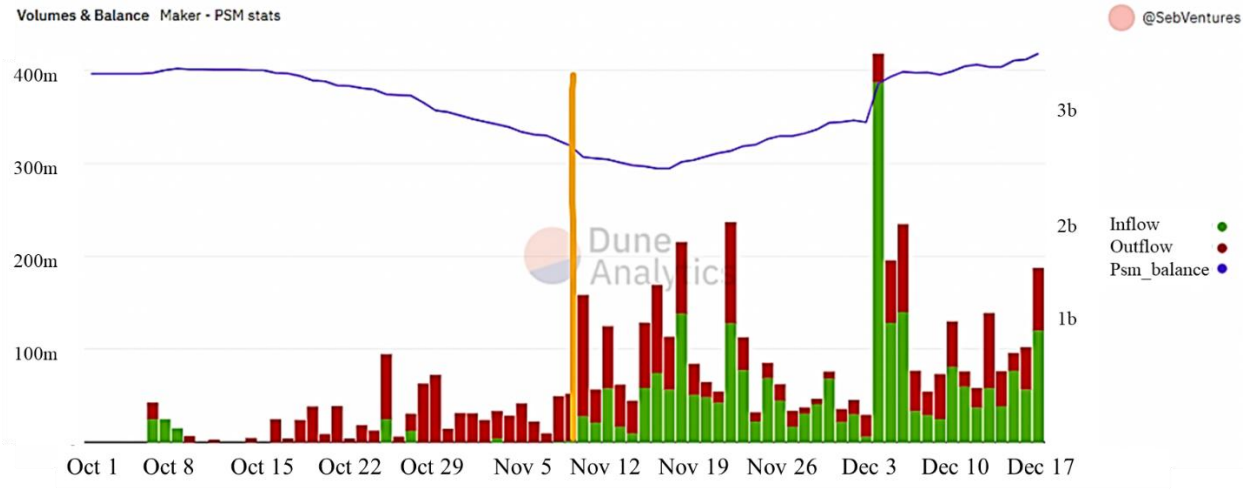


Figure IA.4
DAI's peg to US dollar around poll 665

This figure illustrates the stability of the DAI peg to the US dollar around the period of Poll 665. It highlights that, following the voting in November, the DAI peg exhibits a more stable behavior compared to the fluctuations observed in October. This suggests that Poll 665, and potentially its outcome, may have contributed to an increased confidence in the DAI peg's stability.

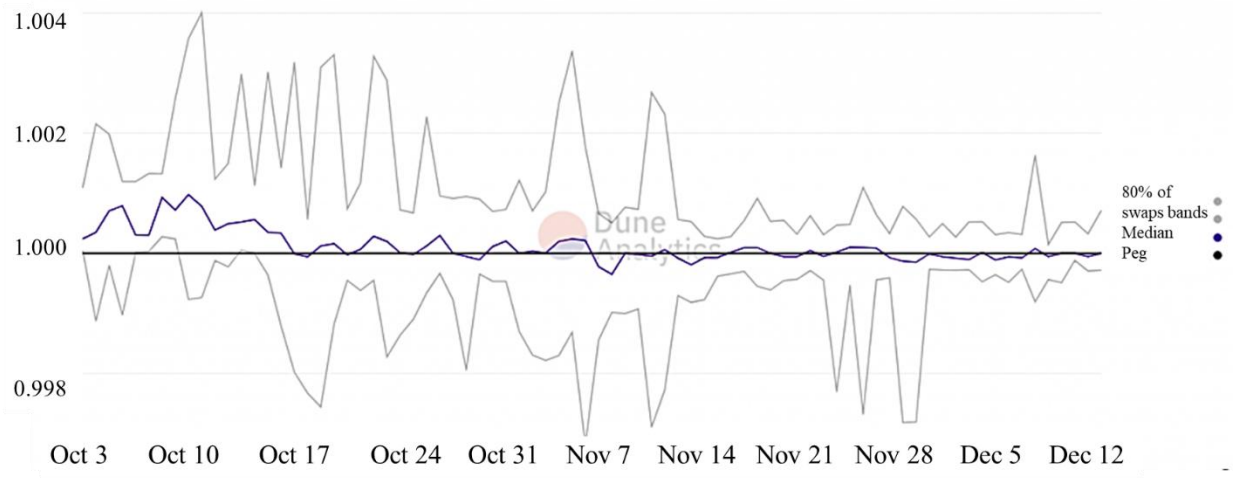


Table IA.16
Prompt used to obtain sentiment label from GPT-O3

This table displays the prompt used to instruct GPT-O3 in assigning sentiment labels to each discussion post. The prompt specifies the task, details the elements to be returned, and provides guidelines for GPT to consider during the classification process.

Prompt

```
* Determine how supportive each discussion post in a MakerDAO Signal Request thread is toward the proposal, taking the associated proposal content as context.
### Input
You will receive:
- **Proposal title**
- **Proposer name**
- **Proposal content**
- **Discussion posts** – each post contains:
  - post index
  - discussant name
  - post content, which may include citations to earlier comments
  > Citations from other posts are delimited by four leading newlines (`\n\n\n\n`) and three trailing newlines (`\n\n\n`).
  > Score only the discussant's own words, not the quoted content.

### Scoring
Assign one **sentiment_score** per post on a continuous scale from 0 to 1:
- 0: extremely negative, firmly against the proposal
- 0 < score < 0.5: relatively negative, some objections
- 0.5: neutral / no clear support or objection
- 0.5 < score < 1: relatively positive, some support
- 1: extremely positive, strongly in favor
- Higher scores mean greater support; lower scores mean greater opposition.

### Explanation
- Provide a brief justification **in no more than 2 sentences**.
- Do **not** use quotation marks in the explanation.

### Special Considerations
- Evaluate sentiment **relative to the proposal**. A phrase's tone can change with context.
- If discussant name == proposer name, treat the post as supportive (score >= 0.5).
- A discussant often maintains a consistent stance across posts but may adjust after reading others. Reflect any change you detect and score each post of one discussant.
- Posts that merely:
  - end the discussion (e.g., moving to poll or executive vote), or
```

- express thanks, or
- present purely factual summaries or questions

are typically **neutral (0.5)**.

- Ignore quoted text; analyze only the author’s new contribution.
- If the discussant says "vote yes" or "agree with", he is most likely supporting the proposal. If the discussant says "vote no" or "disagree with", he is most likely opposing the proposal.

Use this JSON schema:
Sentiment = [{'index':int, 'sentiment_score': int,'explanation':str}]

==========
OUTPUT FORMAT EXAMPLE

[{'index': 0,
'sentiment_score': 0,
'explanation': 'Strong opposition expressed to PoW tokens, viewing them as unethical and unnecessary.'},
{'index': 1,
'sentiment_score': 1,
'explanation': 'Defends PoW value and challenges opposition arguments with logical rebuttals.'},
{'index': 2,
'sentiment_score': 0,
'explanation': 'Advocates removing WBTC while rejecting 0xBTC, maintaining anti-PoW stance.'}
]
==========
Produce nothing except this JSON array.

Table IA.17
Sentiment labeling of discussion posts: examples

The table presents three example posts labeled by GPT-O3 for Poll 655, along with their assigned sentiment scores. The sentiment score ranges from 0 to 1, where higher scores indicate more positive sentiment. The first example is a supportive post, labeled with a sentiment score of 0.95 given by GPT-O3. The second example suggests a compromise solution, resulting in a sentiment score as 0.6. The third example is an opposing post, assigned a sentiment score of 0.1.

Index	Discussion Post	Score	Explanation
1	**Strongly support this, obviously. I believe this is the biggest way** we are currently shooting ourselves in the foot on a daily basis when it comes to momentum and growth. 4 million in revenue, or whatever, is nothing compared to allowing Dai to be a viable alternative to USDC and other centralized stablecoins. There's also the context that a lot of large scale collateral solutions are finally seeing the light of day, like staked ETH, the direct deposit module for aave, and real world assets / backbone collateral such as corporate bonds, so the short term growth in USDC exposure should be seen as a positive rather than a negative, since it means more capital available at 0% cost that we can allocate to other assets and earn profits from. IMO we cannot afford to drop the ball on this so I will follow this up with a MIP that would allow MKR holders to have the final say on this, should the forum process block it. Again, this is the biggest way we are shooting ourselves in the foot on a daily basis - seeing Dai left out of solutions that include all other stablecoins, and also letting people think of Dai differently as simply a "not-quite-stable" coin rather than a real 1:1 USD stablecoin. **It is really a quantum leap in terms of Dais role in the market and we shouldn't let it be delayed longer than the quickest our governance processes will allow.** As an example I learned a while back that most OTC desks have special markets they call 1:1 markets for stablecoins like USDC and other things where there is a 1:1 arbitrage available somewhere. Since Dai doesn't have the 1:1 arb, it doesn't get this kind of treatment and most OTC desks instead consider it a volatile cryptocurrency, using different, more complicated and more expensive processes to price it and make it available to their users. This has forced me to use USDC over Dai in multiple transactions in the past because it creates a significant friction and inefficiency, especially at larger scale.	0.95	Expresses strong and urgent support, calling fee removal critical for Dai's growth.
2	**I'm in favor of lowering the fees for PSM, but would prefer an intermediate option instead of going all the way to 0%.** Maybe starting with 0.05% fee in, 0% fee out, and then reassessing for further reductions (potentially all the way to 0%) after a month. Another option we could consider is "centering" the peg around 1% by reducing fee in but increasing fee out slightly above 0%. For example we could charge 0.025% for both fee in and fee out, which would result in a 0.05% spread / round trip fee from USD to DAI	0.6	Supports lowering fees but prefers a partial step, indicating mild but real backing.

	and back, but would create market conditions where the peg would trade right around 1:1 most of the time and never more than 2.5 bps away from peg (versus up to 10 bps off peg currently). This preserves our ability to earn some revenues from stablecoin swaps (maybe even growing revenues if we see a lot more volume), and also ensures we don't negatively impact Curve pools which serve as an important driver of DAI demand.		
3	The fees in the PSM serve several purposes that keep the system from going off of the rails. The PSM module was deployed to help take on as only as many 3rd-party stablecoins as necessary to get Dai's peg back down to an "acceptable" level after a market downturn. It's stated purpose was to be able to take the hit from a market crash and get enough Dai on the market at a reasonable price to let vault holders cover their positions. **Moving the TIN to 0% means that we will take on to our books all of our competitors stablecoins until that market is completely saturated.** According to the market, Dai is objectively more valuable than the other stables. **I like to think it's subjectively because we're censorship resistant, but Dai's value will only equal other stablecoins when we've cut enough corners on issuance to counteract it's real benefits vs. other stables.** PE has been working for the last year and a half on various solutions to get USDC and other regulated stablecoins off of the books, and **this does the exact opposite of that.** Maker governors should be prepared to take on many multiples of the current portfolio regulated stablecoins if this is adopted. Having the PSM's full or at even greater percentages of Dai backing than what we're currently seeing is going to **limit the appetite to take on more stables in a market crisis** (when we need it the most). Without any spread, there's no limit to how much stable risk the protocol takes on, and zero friction for anyone looking to pass that risk to us. **We would be taking on blacklist, technical, and insider risks for 0 premium in an environment where we absolutely can and should expect to be rugged on these tokens. This is a short-term fix that exacerbates a long-term problem.** There are also **potential legal considerations** around this change, which is why the Foundation did not want to touch the PSM. I'd strongly recommend getting a legal core unit to weigh in on the implications here.	0.1	Lists multiple risks and recommends against zero fees, showing clear opposition.

III. MakerDAO Governance Changes in April 2023

In April 2023, MakerDAO implements significant governance changes as part of its "Endgame Plan", which aims to further decentralize governance, enhance efficiency, increase resilience, boost voter participation, and ensure long-term sustainability. The delegation scheme undergoes five major changes.

First, Aligned Voter Committees (AVCs) are established within MakerDAO. AVCs are groups of MKR holders that operate based on specific values and strategies. Recognized delegates, now referred to as Aligned Delegates (ADs), must join at least one AVC, while shadow delegates are not obligated to do so.

Second, ADs are divided into two groups: Prime Delegates (PDs) and Reserve Delegates (RDs). PDs are the delegates ranked highest by the number of MKR tokens delegated to them, and consequently receive higher compensation than RDs. Once a delegate's status is determined, their monthly payment is based solely on their participation in voting and forum communication, following a structure similar to the previous system, where compensation gradually increases from 75% participation to a maximum at 95% participation.

Third, monthly compensation now consists of two components: MKR and DAI. The maximum monthly MKR payment is 13.75 MKR for PDs and 1.25 MKR for RDs, while the maximum monthly DAI payment is $54,167 for PDs and $8,333 for RDs. The DAI payments provide delegates a stable salary, while the volatile MKR component is designed to align delegates' incentives with MakerDAO's long-term value.

Fourth, instead of directly transferring payments to delegates, compensation accumulates as a budget within MakerDAO's treasury buffer accounts. Once a delegate has accrued at least one month's worth of income, they can request a withdrawal each month, up to the total amount of their accumulated savings.

Finally, all delegates, including ADs, are prohibited from disclosing their real-world identities. This measure aims to protect delegates from potential threats and reduce the bribery by making it harder for internal or external actors to identify them. Simultaneously, a "whistleblower bounty" is offered to anyone who can provide evidence that a delegate has revealed their identity.

These changes could affect delegates' incentives to vote correctly in several ways. First, being part of an AVC may constrain delegates' actions by binding them to the committee's shared

missions and subjecting them to peer monitoring. Second, although the number of MKR tokens delegated to each delegate no longer directly factors into the compensation calculation, it determines which delegates are designated as Prime Delegates each month. The substantially higher compensation for PDs compared to RDs creates powerful incentives for delegates to compete for these top positions by securing more delegated tokens. This structure is akin to the tournament incentives common in other settings, such as sports, asset management industry, and the managerial labor market. Third, including MKR tokens delegates' monthly compensation can further align their interests with MakerDAO's long-term value. Finally, while the anonymity requirement can enhance delegates' independence and integrity, it may also weaken their incentives by reducing reputational costs.