

# How are you DAOing? The state of DAO treasuries

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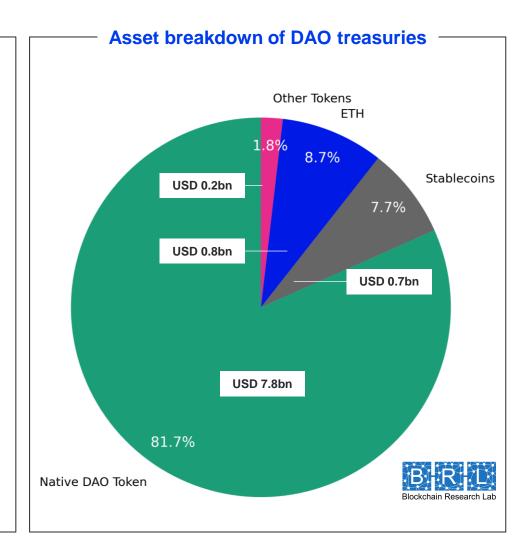
## **Executive summary I/II**



In an era where decentralized finance is becoming increasingly integral to the broader financial ecosystem, **Decentralized Autonomous Organizations (DAOs)** have proven to be key players. Currently commanding a collective **market capitalization of over USD 14 billion**, their financial backbones—DAO treasuries—merit meticulous study. This study aims to **demystify DAO treasury management** to inform stakeholders with the insights needed to navigate these DAO treasuries and provide actionable insights for sustainable growth and effective governance.

Our rigorous analysis of the 20 largest DAO treasuries, which together account for a market capitalization of USD 9.6 billion, reveals striking results. A staggering 81.67% of these treasuries' assets are invested in native DAO tokens. While such concentration grants control, it also exposes DAOs to alarming levels of market volatility and price fluctuation risks. Additionally, most of these DAOs exhibit negative performance metrics, prompting a call for the reevaluation of asset allocation strategies. By distinguishing the goals and purposes of DAOs in two key sectors—Infrastructure and DeFi applications—we find that each category follows a unique risk paradigm.

Our research illuminates pressing issues in DAO treasury management, revealing a clear **need for strategic reassessment across governance models, asset allocation, and operational intricacies**. The spotlight is on the critical importance of recognizing core objectives—ranging from risk management and profit maximization to control and ecosystem sustainability—to inform financial decisions within DAO treasuries.



## **Executive summary II/II**



#### **Key Takeaways**

- Overreliance on native tokens: DAOs exhibit a pronounced bias towards their native tokens, exposing them to elevated risk levels and potential overvaluation.
- Portfolio Performance: Most DAOs register negative returns, making a strong case for asset allocation reevaluation.
- Governance and Operational Agility: Current allocation strategies present liquidity management challenges, posing risks to DAO sustainability.
- Financial Metrics: Questions arise concerning the correlation between
   DAOs' native tokens and their treasury health.
- Volatility and Diversification: DAOs must scrutinize high portfolio volatility and explore diversification into low-volatility assets and real-world assets (RWAs).

#### **Calls to Action**

- DAOs should reconsider their asset allocation strategies, particularly their significant reliance on native tokens.
- Investment into low-volatility assets, such as stablecoins, should be considered to strike a balance between risk and returns and secure long term planning.
- Governance models must adapt to improve liquidity management without causing market disruptions.
- A comprehensive framework for DAO treasury management is necessary to reconcile various objectives and metrics, thereby serving as a guiding tool for DAO governance.

This synthesis sets the stage for a more nuanced understanding of DAO treasury management and paves the way for future research aimed at enhancing governance and sustainable growth of DAO ecosystems.



The analysis suggests **great opportunities for enhancing DAO treasury management**, even given the diverse goals and constraints of individual DAOs. To distinguish DAO treasury specifics from traditional treasury practices, we **need deeper research**. This will help pinpoint areas for improvement and guide us towards evolving DAO treasury management collaboratively.

## Motivation, data, and methodology



#### **Motivation**

Decentralized Autonomous Organizations (DAOs) have swiftly become cornerstones in the crypto-economic landscape, commanding a market value of over USD 14 billion. While DAOs themselves operate as **decentralized entities governed by collective member decision-making**, a critical but often underexplored component is its treasury. The treasury serves as the financial backbone, housing assets that are used, for example, to fund development proposals, invest in projects, and reward community involvement. In essence, the **treasury fuels the DAO's objectives and initiatives**.

However, managing these treasuries comes with its unique set of challenges and opportunities. Unlike traditional organizational treasuries focused on cash, investments, and risk mitigation, **DAO treasuries exist in a more volatile and less regulated environment** without having access to traditional securities that require KYC/AML checks that DAOs, per definition, cannot fulfill. They are susceptible to market risks, governance issues, and operational inefficiencies, necessitating diversified asset allocations and robust risk management strategies. On the flip side, they offer unparalleled advantages like high returns on innovative investments.

Given these complexities and the growing significance of DAOs, it becomes imperative to examine how these treasuries are managed. The goal of this research note is to **dissect the underlying mechanisms of DAO treasury management**, **scrutinizing asset allocations**, **volatility**, **and liquidity**. Through this lens, we aim to equip stakeholders with the insights needed to navigate and evaluate the landscape of DAOs.

#### **Data and methodology**

For this analysis, the focus has been narrowed down to pure DAOs, excluding more centralized forms (e.g., Ethereum Foundation). Our sample comprises the **20 largest DAO treasuries**, ranked according to the total market value of their treasuries. The data collection period spanned **from September**, **20th to 27th, 2023**. We sourced the data from a variety of platforms, including <code>DeFiLlama.com</code>, <code>DeepDAO.io</code>, and <code>CoinGecko.com</code>, and from individual DAO treasury smart contracts. During the data cleaning process, several adjustments were made to account for specifics such as Mantle's transition phase from <code>BitDAO¹</code>, MakerDAO's stablecoin holdings, and the rebranding of Volta-Club.

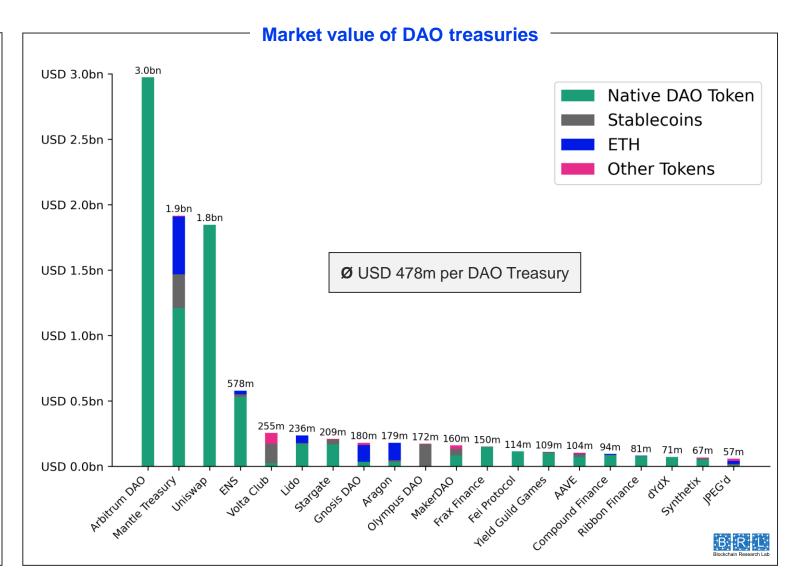
Performance metrics are based on mean-variance analysis using logarithmic returns. In addition, we assumed a volatility of 0% for stablecoins in the analysis. "Other tokens" only comprise crypto assets that have a share of at least 1% in the respective treasury. Accordingly, the portfolio allocation of DAO treasuries was assessed using normalized weights. Lastly, we use liquidity metrics such as total supply, as well as order depth and trading volumes that are based on a 24-hour average.

### 20 DAO treasuries manage a total of USD 9.8 billion



In the rapidly evolving domain of DAOs, our analysis sheds light on the asset allocation strategies within the treasuries of the top 20 DAOs, which collectively command a market capitalization of USD 9.8 billion. The concentration of wealth within DAO treasuries is notably skewed, with the three largest treasuries—Arbitrum DAO (USD 3.0 billion), Mantle Treasury (USD 1.9 billion), and Uniswap (USD 1.8 billion)—accounting for nearly three-quarters of the total market capitalization of the top 20 DAOs.

This dominance is in stark contrast to the more evenly distributed treasuries that follow. For instance, subsequent to ENS (USD 578 million), the treasuries range from as low as USD 57 million (in the case of JPEG'd) to USD 255 million (as observed in Volta Club). On average, a DAO holds USD 478 million across different investment classes. In general, DAOs predominantly allocate their assets across four major asset classes: their native (DAO) token, stablecoins (e.g., USDC), Ether (or wrapped Ether), and other tokens (e.g, Uwu-Lend).



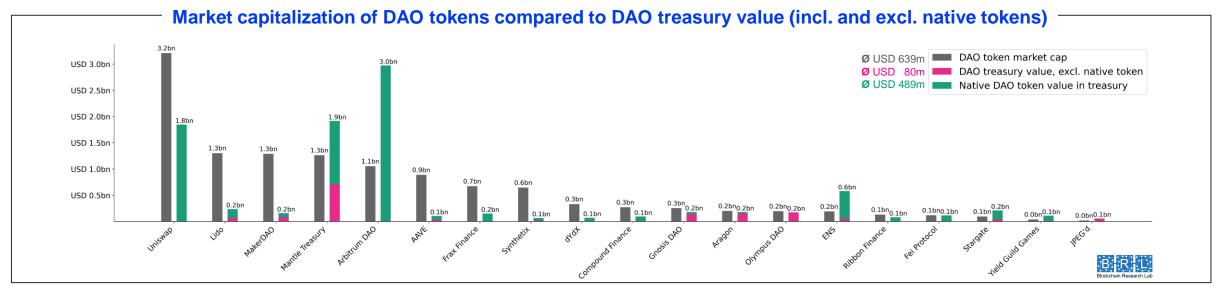
### Our study reveals over- and undervalued DAO tokens



By comparing the current market capitalization of a DAO tokens with its treasury value, we can discern possible under- or overvaluation. This assessment is refined by dividing the treasury into its native tokens and other investments, such as stablecoins and Ether. The average total market capitalization for DAO tokens in the study stands at USD 639 million, with a considerable variance. For instance, Uniswap boasts a market cap of USD 3.2 billion, while smaller entities like JPEG'd are valued with USD 17.6 million. In contrast, Mantle's exhibit treasury value exceed its DAO token market cap, suggesting robust internal ecosystems.

Further scrutiny reveals the value of a DAO's treasury when discounted by the native token. On average, this value is USD 88 million per DAO token, which is markedly lower—by 86.2%—compared to their current average market capitalization. This discrepancy indicates that most DAO tokens are potentially overvalued. However, DAOs like Aragon showcase treasuries closely approximating their DAO token market caps, implying potential undervaluation. Especially, JPEG'd appears to hold a well-diversified treasury, with low holdings of its native token (12%), yet, high allocation in stablecoins (18%), Ether (44%), and other tokens (26%).

The link between a native DAO token and the DAO treasury differs for the different DAOs and can be rather weak. Ownership of DAO tokens does not come with rights to access the treasury but rather on how these funds are supposed to be used—and such uses can be severely restricted. Furthermore, a DAO token can have additional utility value that is not represented in the value of the treasury, for example, fee rebates for a service. It's noteworthy that many DAOs hold locked tokens, which can at times exceed the total market cap of their native tokens. This raises a pivotal question: **How would unlocking these tokens shift value from existing token holders to the treasury?** These findings add a nuanced layer to our understanding of DAO token valuation, hinting at the need for more granular analyses accounting for asset diversification.



<sup>&</sup>lt;sup>2</sup> Volta Club has no historical prices and thus is excluded in this analysis.

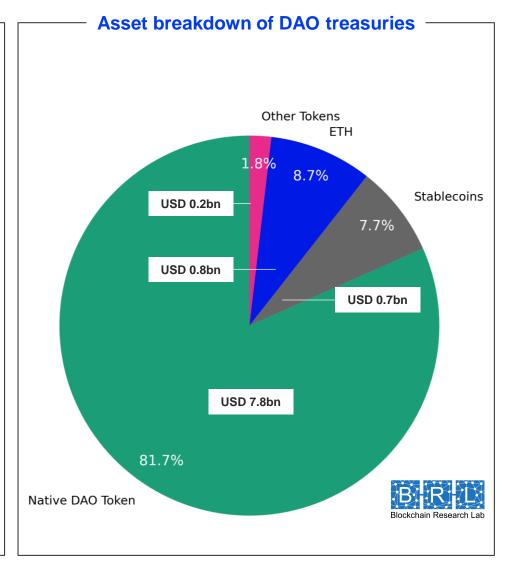
## 81.7% of the total value of DAO treasuries consists of their native tokens



The data unveils a compelling narrative, **native DAO tokens emerge as the cornerstone of most treasuries**, constituting 81.7% (USD 7.8 billion) of the total asset allocation. This is particularly pronounced among larger DAOs like Uniswap and Arbitrum DAO, which hold all of their reserves in their native token, thus being highly exposed to the inherent volatility of these tokens. This raises questions about the risk management strategies employed by these larger DAOs.

Conversely, **stablecoins account for a relatively modest portion** of the market at 7.7% (USD 0.7 billion). However, DAOs like Volta Club and Olympus DAO appear to adopt a more diversified asset allocation strategy, potentially indicating a risk-averse approach. Specifically, Olympus DAO holds a significant portion of its treasury in the DAI stablecoin (97.3%), diverging from the predominant trend of native DAO token and Ether holdings. **Ether occupies a nearly 8.8% share** (USD 0.8 billion). Large Ether holdings by Gnosis (71.5%) and Aragon (75.1%) deviate from the broader investment trends observed, potentially indicating a bullish outlook on Ethereum. Also, it might suggest unique asset strategies that could be the subject of future research.

The category of other tokens, despite having the least market presence at 1.9% (USD 0.2 billion) of total assets, presents interesting individual cases such as Volta Club's 28% allocation in Uwu-Lend and MakerDAO's 18% in Uniswap. Despite its status as the largest cryptocurrency, **Bitcoin garners minimal attention from DAO treasury managers**. Specifically, we observe an investment allocation of **less than 0.5% in wrapped Bitcoin (wBTC)** across only three DAOs; AAVE, Ribbon Finance, and Compound Finance.



## Infrastructure and DeFi App DAOs exhibit divergent asset allocation strategies

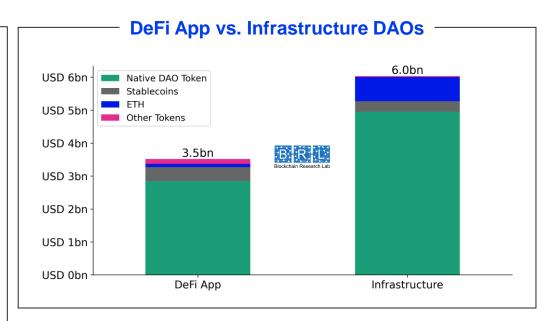


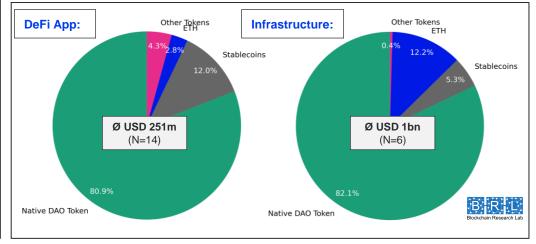
DAOs can be categorized in two clusters based on their goals, purposes, and operational focus: **Infrastructure-centric organizations** and **DeFi applications (Apps)**. This clustering offers insights into the underlying strategic imperatives.

Infrastructure-centric DAOs constitute USD 6 billion, encapsulating approximately two-thirds of the total treasury market capitalization. These organizations are principally concerned with developing and supporting the infrastructure of blockchain ecosystems. Conversely, DeFi Apps, accounting for USD 3.5 billion in treasury value, engage primarily in the facilitation of decentralized financial services.

We find marked disparities in asset allocation strategies between these two clusters. Infrastructure-centric DAOs (e.g., Arbitrum) manage on average USD 1 billion with a preference for their native token (82%). Also, they maintain a substantial allocation in Ether (12.2%). Yet, they diversify less in stablecoins (5.3%) and other tokens (0.4%). In contrast, DeFi Apps, such as AAVE, hold on average USD 251 million and show more diversified asset allocation strategies. While native tokens continue to predominate (81.0%), these DAOs exhibit a higher allocation to stablecoins (12.0%) and other tokens (4.3%), while Ether investments are comparatively modest at 2.8%.

In sum, Infrastructure-centric organizations and DeFi Apps exhibit divergent asset allocation behaviors. Infrastructure-centric DAOs predominantly invest in Ether and their native tokens, exposing them to greater market volatility. Conversely, DeFi Apps adopt a slightly more balanced portfolio, potentially leading to more organizational by mitigating sector-specific risks. Future research should aim to quantify the risk-return profiles of these divergent strategies, and to assess their impact on the ability of DAOs to fulfill their mission objectives.



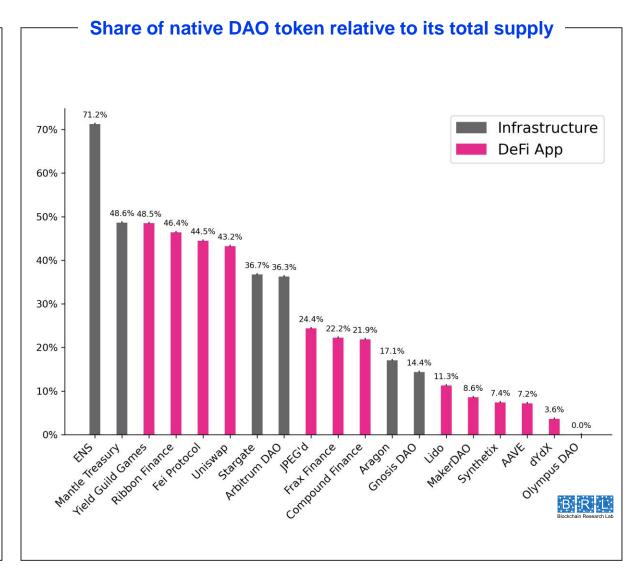


## DAO token distribution varies widely among DAOs



An empirical analysis sheds light on the share of their native tokens relative to the total market supply of DAOs. DeFi Apps, on average, hold about 22.2% of their native tokens, while Infrastructure DAOs hold a notably higher average of approximately 37.4% of the total DAO token supply. Infrastructure DAOs like ENS (71.3%) and Mantle (48.7%) hold extraordinarily high shares of their native tokens, potentially indicating a centralized control structure that could heighten risks of market manipulation and liquidity challenges. In contrast, DeFi Apps exhibit a more diversified range, with allocations spanning from 48.5% in Yield Guild Games to a mere 3.6% in dYdX. This range suggests a balance between control and market exposure, although exceptions like Olympus DAO's 0% holding hint at alternative asset management strategies or complete decentralization. DAOs with very low shares, such as Lido and dYdX, may face increased market volatility and liquidity risk.

In essence, higher native token shares may offer DAOs more control at the cost of potential liquidity risk and susceptibility to market manipulation. Conversely, lower shares could signify greater decentralization but may entail increased volatility and market risk. These insights are crucial for stakeholders considering risk and operational strategies in DAOs, warranting further study on how native token holdings affect liquidity and market risk.



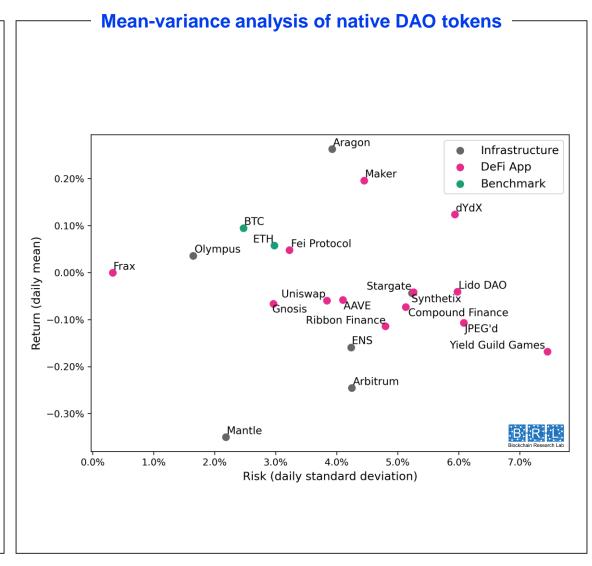
## Risk and return profiles of native DAO tokens vary across Infrastructure-centric and DeFi Apps DAOs



The analysis of risk and return is crucial for understanding and evaluating the native DAO token performance and its price volatility. It informs strategic asset allocation, aiding in balancing risk and return, which is essential for long-term sustainability and for fulfilling fiduciary responsibility to token holders.

The data reveals significant variations in the performance and risk profiles of DAO tokens categorized under Infrastructure-centric entities and DeFi Apps. Most DAOs show negative daily mean and Compound Annual Growth Rate (CAGR) values, with Arbitrum (mean: -0.25%, CAGR: -59.2%) and Mantle (mean: -0.35%, CAGR: -72.1%) leading the decline in the Infrastructure sector. Conversely, Aragon and Maker, also in Infrastructure-centric entities and DeFi Apps respectively, show impressive CAGR gains above 100%. Daily Risk, measured by standard deviation and annual risk, tends to be elevated across all DAOs but is especially high in DeFi Apps like Yield Guild Games (7.46%) and Lido DAO (5.98%). Interestingly, benchmarks BTC and Ether show positive CAGRs but at significantly reduced risk compared to DAOs.

For DAO treasuries, such insights could be valuable for refining their investment allocation strategy, potentially shifting towards less volatile yet more profitable cryptocurrencies like BTC and Ether. The contrasting performance and risk profiles among Infrastructure-centric and DeFi App DAOs signal an opportunity to reevaluate asset allocation strategies for long-term sustainability and risk mitigation.



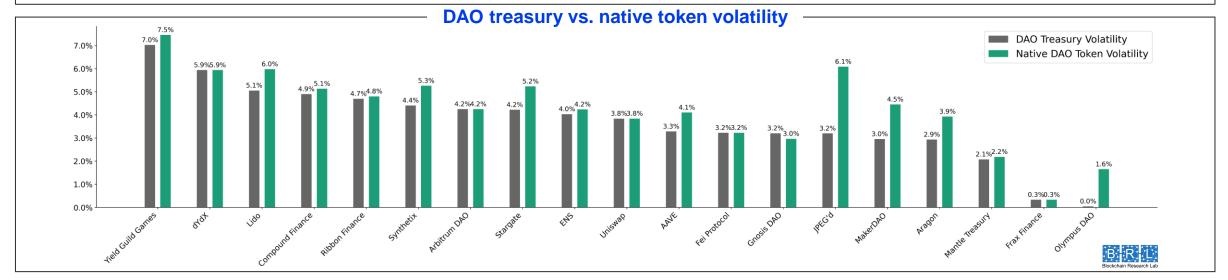
### Diversifying DAO treasuries leads to reduced portfolio risk



Understanding the DAO's treasury volatility is crucial for assessing financial risk and informing governance decisions on asset allocation and diversification. Beyond guiding governance and investment choices, the volatility metrics also serve as an important signal to external stakeholders, such as investors and regulators, about the stability and risk profile of the DAO and its native token. High volatility may deter external investment and attract regulatory scrutiny, while lower volatility could be seen as an indicator of effective risk management.

The average daily volatility of the DAO treasuries is 3.63%, while **DeFi Apps (3.71%)** are slightly more volatile than those of Infrastructure treasuries (3.45%). However, within each category, there is variability as evidenced by outliers like Olympus DAO (0.04%). The low volatility of Olympus DAO is due to a 99% allocation in stablecoins, which typically have near-zero fluctuation. JPEG'd has a relatively low treasury volatility (3.20%) but a high native token volatility (6.08%) due to a more diversified allocation in other crypto assets, nearly halving its DAO treasury risk. The Yield Guild Games DAO treasury has the highest daily volatility at 7.02%, largely due to its 94% holding in its own native token (7.46%).

DAO treasuries with a pure allocation (100%) in their own native tokens, such as Arbitrum, Uniswap, and dYdX, face elevated risk tied to the volatility of these specific tokens. In total, 13 DAOs have at least somewhat mitigated the volatility of their treasury compared to their native token, while six DAO treasuries even have higher volatility than their native token<sup>2</sup>. For example, Gnosis DAO shows a treasury volatility of 3.21% compared to the volatility of its own native token, which stands at 2.96%. The variability in treasury volatility across DAO categories and individual entities suggests a need to delve deeper into the effects of asset allocation strategies on financial risk and governance decisions.



<sup>&</sup>lt;sup>2</sup> Volta Club has no historical prices and thus is excluded in this analysis.

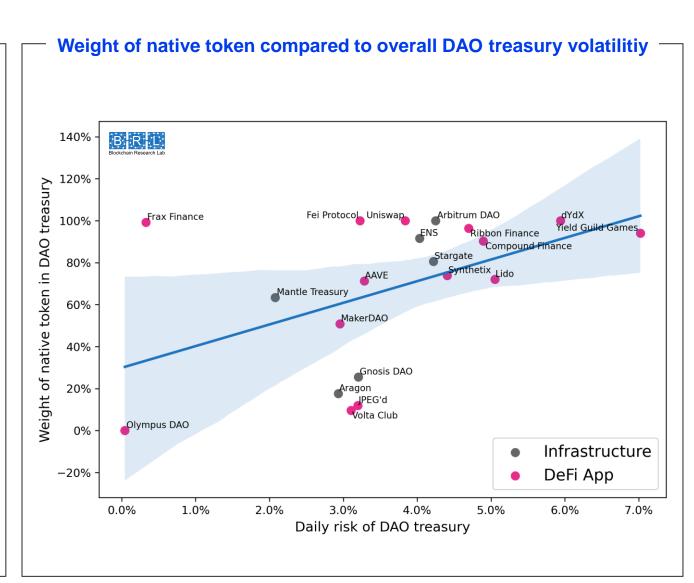
## Larger amounts of native tokens in DAO treasury links to higher volatility



Our analysis reveals that the **weight of a DAO's native token within its treasury is a significant factor** in determining the treasury's overall risk profile. Generally, a higher proportion of a native DAO token in the treasury correlates with increased volatility, as well as decreased diversification, making the treasury more vulnerable to price fluctuations in its native token.

This trend has outliers such as Frax Finance, which has a unique treasury composition that deviate from the norm, as discussed before. Despite holding less than 25% of their own tokens, certain DAOs—including Gnosis DAO, Aragon, JPEG'd, and Volta Club—exhibit average treasury volatilities ranging from approximately 3% to 3.3%. This is largely attributed to the higher allocation in Ether, e.g., Gnosis DAO (77%). In contrast, Volta Club has a substantial investment in the Uwu-Lend Token (28%), carrying a volatility of 11.9%, thus influencing its treasury volatility without stark reliance on its native token.

In sum, understanding the volatility characteristics of DAO treasuries is essential for optimizing governance and investment strategies. The observed variability among DAOs highlights significant opportunities for improving portfolio and risk management, aiming for lower risk without compromising returns.

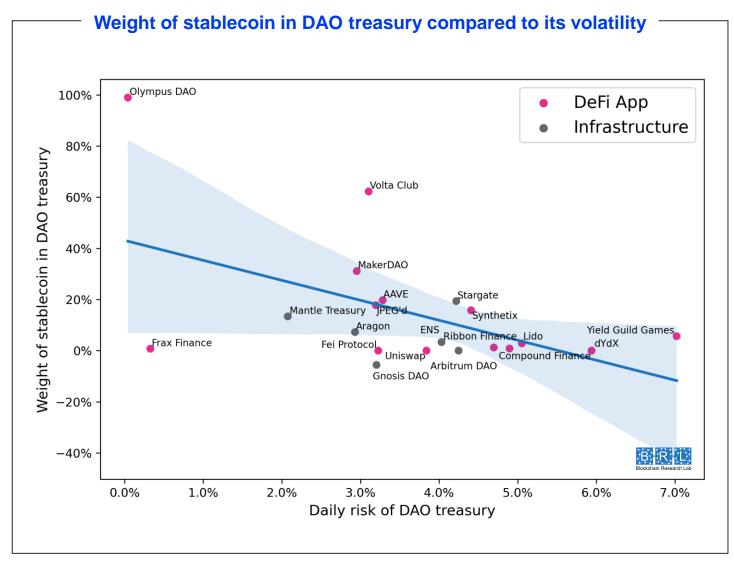


## Stablecoins offer an opportunity for diversifying DAO treasuries and reducing overall volatility



Stablecoins offer a valuable avenue for diversifying DAO treasuries, as they tend to mitigate the inherent volatility often found in cryptocurrency asset portfolios. Our analysis reveals a linear relationship between the weight of stablecoins in DAO treasuries and their overall risk profile, indicating that a higher allocation in stablecoins generally correlates with reduced volatility. Surprisingly, half of the sample allocate less than 5% to stablecoins, with Gnosis DAO even maintaining a negative position.

Olympus DAO and Frax Finance have contrasting allocations in stablecoins but maintain low overall treasury volatility. Notably, only two DAOs—Olympus DAO (99%) and Volta Club (62%)—allocate a significant proportion of their treasury to stablecoins. Conversely, DAOs with the highest treasury volatilities, such as Yield Guild Games, allocate not more than 6% to stablecoins, making them highly vulnerable to market shocks. Hence, there is a compelling case for DAOs to explore low-risk investment strategies to fortify their treasuries against market turmoil, such as increasing their stablecoin allocation.



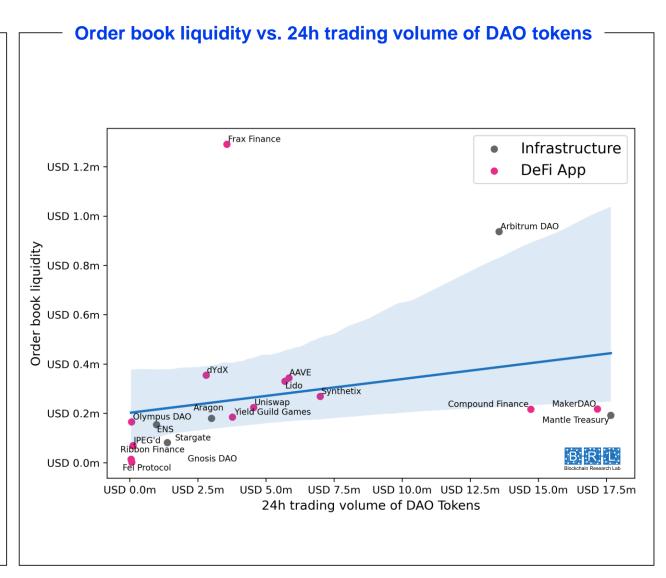
### Trading activity and liquidity of DAO tokens correlate



The question arises whether the valuation of a DAO treasury should be reevaluated based on the ease of liquidating its DAO tokens. Analyzing the order depth and trading volume becomes paramount in this context since it is central for DAO treasuries to understand liquidity and market activity. By comparing these metrics, treasuries can refine their risk assessment and develop more informed trading strategies

The **order book liquidity varies widely** on the most active trading venue. For instance, Frax Finance requires a high capital of USD 1.3 million to move the price, while Fei Protocol only needs a few thousand USD. The **24h trading volume also shows significant variability**. For example, Mantle has a trading volume of USD 17.7 million while several other DAO tokens trade below USD 0.1 million. DAO tokens like Mantle and Arbitrum show both high order book liquidity and high trading volume. These could be considered more robust or stable in the market. Yet, Olympus DAO has a low trading volume but relatively high order book liquidity. This could indicate less liquidity but higher stability. of Gnosis DAO and Ribbon Finance indicate low order book liquidity and trading volume, which could imply that they are riskier.

In sum, we observe a link between the amount of trading volume and the order book liquidity. This relationship suggests that tokens with higher trading activity also tend to have deeper liquidity and vice versa, implying a potential value for DAOs to engage with market making companies to provide liquidity for their native token and offering more stability for DAO treasuries, investors, and traders.



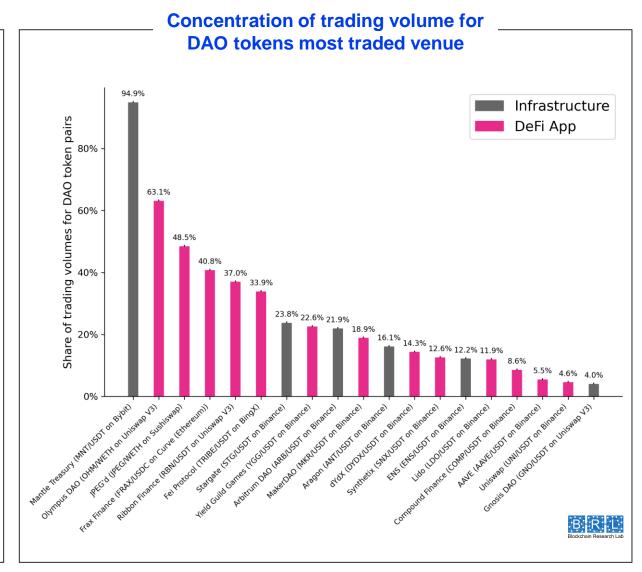
## Trading of DAO tokens mostly occurs on Binance and decentralized platforms



Analyzing trading data shows varying concentration of trading activities on single trading venues<sup>3</sup>. Such high concentration on one exchange may imply vulnerability, while **diverse volume across multiple credible platforms suggests lower centralization risk and potentially greater liquidity**. This understanding is key for effective liquidity management and risk mitigation.

We observe that Mantle stands out with the highest share of trading volume on Bybit (94.9%), highlighting the prominence of ecosystem-specific exchanges. Following that, Olympus DAO, JPEG'd, Frax Finance, and Ribbon Finance predominantly trade on decentralized exchanges like Uniswap V3 (on the Ethereum platform) and Sushiswap. Binance dominates as the most frequent exchange for DAO tokens followed by Uniswap V3. DAO tokens like AAVE (5.45%) and Uniswap (4.56%) exhibit more diversified and thus robust liquidity. Also, the **majority of DAO** tokens trade against USDT, reflecting market stability concerns.

The findings reveal that larger trading volumes of DAO tokens mostly occur on Binance and decentralized platforms. This adds another layer to our understanding of liquidity, preferences, and risks in the DAO token market. Future research could focus on the links between DAO categories, preferred trading platforms, centralization risks, and the role of ecosystem-specific and decentralized exchanges in DAO token liquidity.



### Deeper analyses of DAO treasuries are promising



#### DAO objectives, performance, and control

There's a pressing need to understand the underlying core objectives and strategies of DAO treasury management, ranging from risk optimization and return maximization to issues of control and sustainable ecosystem development. Understanding these objectives sets the stage for investigating how DAOs are currently organizing their treasury management, how well they are performing and how they can improve.

A key question is whether there is a statistical **relationship between the performance of a DAO's native tokens** and its treasury. This inquiry naturally leads to another important question: Should DAOs aim to reduce their dependency on native tokens over time, given the potential risks?

Furthermore, research should **strategic considerations of decentralization and control** within DAOs is promising. Are there conflicting goals when it comes to the decentralization versus control debate, especially in the context of treasury management?

#### **Active treasury management and real-world assets**

A promising angle to improve on the objectives of a DAO is **active treasury management.** This could **generate yield** for the treasury and optimize risk-return metrics. In this regard, it is important to better understand the operational complexities of pure DAOs and the restrictions that stem from these, for example, that, per definition, they **cannot meet Know-Your-Customer (KYC) checks** and are thus barred from access to traditional securities.

With high volatility observed across DAO treasuries and limitations on the scope of investments, **diversification** is both paramount and challenging. One promising opportunity are **tokenized real-world assets** (RWAs), such as tokenized commodities (especially gold) or luxury items. With tokenized real-world assets still in their infancy, research into their structure and how they can be used by DAO is key.

A unifying thread through all these avenues of investigation is the **need for a comprehensive framework for DAO treasury management**. Such a framework integrates the varied facets and challenges, providing a holistic tool for academic inquiry and practical governance.

## DAOs play a vital role in crypto markets that needs further exploration



#### **Summary**

This research note focuses on the treasuries of the top 20 decentralized autonomous organizations (DAOs), which together command a significant market capitalization of USD 10.7 billion. One of the most striking findings is the **preference for native DAO tokens in asset allocation strategies**, constituting about 83.69% of holdings on average. While this heavy investment in native tokens might provide DAOs more control over their assets, it also exposes them to significant volatility and price fluctuation risks.

Another insight is the negative performance metrics of these portfolios. Most DAO tokens in the sample show negative returns, indicating underperformance. This trend serves as a call for DAOs to reevaluate their asset allocation strategies for enhanced risk mitigation and long-term ecosystem sustainability. DeFi Apps, exhibiting slightly higher volatility than Infrastructure-centric DAOs, have distinct risk profiles, while DAO treasuries such as JPEG'd and Volta Club demonstrate more diversified portfolios. Thus, examining the link between a DAO's token performance and treasury diversification is vital for assessing its financial health.

#### **Recommendations and outlook**

The market behavior between DAO tokens varies widely, especially regarding liquidity. **Tokens with higher trading activity usually offer deeper liquidity**, but also carry higher market risks. Most of this trading activity is concentrated either on Binance or decentralized platforms, further complicating the liquidity profile of DAOs.

From a governance perspective, the **asset allocation strategies pose challenges to operational agility**. DAOs with high concentrations of native tokens must carefully manage liquidity to fund operations without causing market disruption. This observation emphasizes the **need for improved risk management strategies**. Diversifying treasury allocations by increasing investments in **stablecoins** seems only logical and straightforward. DAOs should also explore investments in other low-volatility and uncorrelated assets like tokenized **real-world assets** that promise a balancing act between risk and returns. Additionally, in the DeFi ecosystem, **lending**, **staking**, **or leveraging tokens** can offer enhanced opportunities for yield.

While this research note revealed valuable insights into the asset allocation, performance, and risk profiles of top DAO treasuries, it also **highlights the need for strategic reevaluation of the role of treasury management** of DAOs. This requires ongoing research and exploration.

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