

# Content Reference: Decentralized Autonomous Organizations (DAOs)

Digital Finance — BSc Course

## Section 1: Key Definitions

- **DAO (Decentralised Autonomous Organisation)** — an entity governed by smart contracts and token-holder votes rather than a board of directors; rules are encoded on-chain, treasury is transparent, and execution is automatic.
- **Governance token** — a crypto token that grants its holder voting rights over protocol decisions (e.g. UNI for Uniswap, COMP for Compound, MKR for MakerDAO).
- **Proposal** — a formal on-chain or off-chain motion (e.g. “change fee to 0.3%”) that token holders vote on; typically passes through discussion, temperature check, and binding vote phases.
- **Quorum** — the minimum percentage of token supply or participation required for a vote to be valid; typical DAO quorums range from 4–10% vs. 50%+ for corporate resolutions.
- **Delegation / liquid democracy** — transferring your vote weight to a trusted delegate without transferring your tokens; delegates vote on your behalf, and you can revoke at any time.
- **Multisig (multi-signature wallet)** — a wallet requiring  $m$ -of- $n$  signers to approve a transaction (e.g. 4-of-7 Gnosis Safe); used to guard DAO treasuries against single points of failure.
- **Treasury** — the pool of assets (tokens, stablecoins, NFTs) collectively owned by the DAO; spending requires a governance vote or multisig approval.
- **Ragequit** — a mechanism (pioneered by Moloch DAO) allowing a member to exit with their proportional share of the treasury if they disagree with a decision.
- **Vote escrow (ve)** — locking governance tokens for a fixed period to receive boosted voting power; longer lock = more influence (used by Curve’s veCRV model).
- **On-chain voting** — votes recorded as blockchain transactions; transparent and tamper-proof but costs gas per vote.
- **Off-chain voting / Snapshot** — votes signed cryptographically but recorded off-chain (zero gas cost); results are non-binding unless a multisig executes the outcome.

## Section 2: Core Concepts

### Voting Mechanisms & Governance Design

**Token-weighted voting:** votes = tokens held. Simple but plutocratic — a whale with 51% of tokens controls every decision.

**Quadratic voting:** cost of  $n$  votes =  $n^2$  voice credits. Mathematically:  $\text{Votes} = \sqrt{\text{Credits spent}}$ . Prevents whale dominance because buying 10× influence costs 100× the credits.

**Quorum thresholds:** minimum participation for a valid vote. Typical DAOs: 4–10% of token supply. Compare: corporate proxy votes require 50%+ of shares represented.

**Delegation:** transfer vote weight without transferring tokens. Revocable at any time. Enables “liquid democracy” where experts accumulate influence without capital concentration.

**Conviction voting:** vote weight grows with the time you keep your tokens staked on a proposal. Rewards long-term commitment over flash-loan attacks.

## Section 3: DAO Type Comparison

Type	Examples	Governance	Treasury
Protocol DAO	Uniswap, Aave, MakerDAO	Token-weighted voting	\$100M–\$8B
Investment DAO	The LAO, MetaCartel Ventures	Member shares (ragequit)	\$1M–\$50M
Social DAO	Friends With Benefits	NFT-gated membership	\$1M–\$10M
Service / Guild DAO	Raid Guild, dOrg	Contribution-based shares	<\$5M

## Section 4: Governance Mechanisms

Mechanism	Fairness	Whale Resistance	Complexity	Real-World Use
1-person-1-vote	High	High	Low	Rare in DAOs (Sybil risk)
Token-weighted	Low	None	Low	Most DAOs (Uniswap, Compound)
Quadratic	Medium	High	Medium	Bitcoin, CLR funding rounds
Conviction	Medium	Medium	High	1Hive, Gardens framework

## Section 5: Key Facts & Figures

- **The DAO hack (2016):** \$60M stolen via a re-entrancy exploit, leading to the Ethereum hard fork that split ETH from Ethereum Classic.
- **DeepDAO** tracks **13,000+** DAOs with **\$25B+** in combined treasuries (as of 2025).
- **MakerDAO:** \$8B TVL, governs the DAI stablecoin (rebranded to Sky/USDS in 2024); one of the oldest and most complex DAO governance systems.
- **Uniswap:** 310K+ governance token holders, but typical voter turnout is just **1–5%** of circulating UNI.
- **Wyoming DAO LLC law (2021):** first US state to grant DAOs legal entity status; requires a registered agent and smart contract filing.
- **Typical DAO voter turnout:** 3–5% of token supply, compared to 70–80% participation in corporate proxy votes.

## Section 6: Key Risks

1. **Voter apathy** — 3–5% turnout enables a small minority to capture governance; decisions may not reflect the community.
2. **Whale domination** — top 10 addresses often hold >50% of governance tokens, making “decentralised” governance effectively plutocratic.
3. **Governance attacks** — flash-loan voting: borrow millions of tokens, vote, return them in one transaction. Beanstalk lost \$182M this way (April 2022).
4. **Legal ambiguity** — most jurisdictions have no DAO-specific laws; members may face unlimited personal liability as a general partnership by default.
5. **Smart contract bugs** — exploits in governance contracts can drain the treasury or override vote outcomes; audits reduce but do not eliminate risk.
6. **Plutocracy** — “1 token = 1 vote” systematically favours wealth over participation, replicating the inequality DAOs were designed to fix.

## Section 7: Further Reading

- Buterin, V. (2021). “Moving beyond coin voting governance.” *vitalik.eth.limo*.
- DeepDAO.io — DAO analytics dashboard: treasury sizes, voter participation, proposal history.
- Snapshot.org — off-chain governance platform used by 30,000+ projects for gasless voting.
- Wyoming DAO Supplement to the LLC Act (2021), Wyo. Stat. §§ 17-31-101 to 17-31-116.