

Chapter 7

Public vs. Private Blockchains Governance Implications

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ABSTRACT

This chapter examines how blockchain governance, whether public or private, extends beyond technical design into the realm of institutional values, legal frameworks, and societal priorities. Through sectoral case studies in finance, healthcare, and supply chains, it highlights how governance structures directly shape blockchain's decentralization, transparency, control, and trustworthiness. Public blockchains offer openness and resilience but face regulatory uncertainty and coordination challenges, while private blockchains provide control and compliance but risk reintroducing centralization. Key policy recommendations stress designing governance from the outset, enabling sector-specific regulation, encouraging hybrid architectures, and incentivizing responsible practices.

INTRODUCTION

In recent years, the decentralized idea of blockchain technology has reimagined an array of industries with solutions that are built on the distributed system, in a vast range of sectors (Sanka et al., 2021), varying from the financial ones (Wu et al., 2024) and supply chain management (Menon & Jain, 2024) to healthcare (Kasyapa & Vanmathi, 2024) and digital identity (Song et al., 2025). Blockchain is a distributed ledger technology that enables secure, non-alterable, and open recording of transac-

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tions without having a central authority. Decentralization, trustless interaction, and tamper-proof data have all contributed to its value rise and provide new solutions to problems previously mediated by third parties. Blockchain has revolutionized our understanding of trust, value, and coordination in the digital world, since it has facilitated peer-to-peer agreement and automated rules via smart contracts (A. Kumar & Sharma, 2025; P. Kumar & Gautam, 2025).

But, with the increasing complexity and size of blockchain-based systems, the problem of governance, i.e., who decides what decisions, how to enforce them, and on what rules, has increasingly taken center-stage (Cengiz, 2023a; De Filippi et al., 2020; Liu et al., 2023). With no party in the distributed environment controlling everything, governance would dictate how conflicts would be solved, how upgrades would occur, and how the interests of the community would be weighted. Such dissolution of conventional hierarchies is both promising and dangerous: decentralization can increase resilience and inclusiveness, and can result in fragmentation, inefficiency, or even exploitation of minority interests by focused actors unless governance systems are well-designed and properly enforced.

One of the main determinants that influence blockchain system governance occurs in the case of a public versus a private blockchain (permissionless/permissioned). Common blockchains such as Bitcoin or Ethereum are accessible to everyone, and those who qualify can participate in transaction verification and decision-making to a wide extent. These systems stress transparency, censorship resistance, and decentralization. Conversely, the private blockchains are normally open to anyone and are restricted to familiar actors, e.g., corporations or consortia, who control access and who have the right to validate on it and mutate protocols. Such a regulated setting has room to be efficient, compliant, and tailored to governance, yet must trade off with transparency and democratically accountable governance. Such basic differences in structure lead to conflictual models of governance, each of which has implications concerning regulation, stakeholder confidence, and scale (Dhillon & Sivabalan, 2025; N. Kumar et al., 2025).

The chapter attempts to examine critically the aspects of governance in both public and private blockchains. It starts by comparing their architectures and governance patterns and then proceeds to look in detail at the important areas of governance, like the consensus mechanisms, the decision-making process, and regulatory conformity.

PUBLIC VS. PRIVATE BLOCKCHAINS

The most important architectural difference at the root of the blockchain technology can be seen that it has significant consequences on the governance, and one of them is the public (permissionless) and the private (permissioned) blockchain.

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