

Why “Code Is Law” Fails for Real-World Assets

Governance Gaps in Tokenized Markets

Chung Hei Sing

December 2025 (Updated)

Abstract

The proposition that “code is law” has been central to the development of blockchain-based markets, promising automated enforcement, reduced transaction costs, and trustless coordination. While this paradigm has shown partial success in digital-native environments, its application to real-world assets (RWAs) has proven far more problematic. Despite increasing experimentation with tokenization, institutional adoption remains limited.

This paper argues that the primary barrier is not technological maturity, but a structural mismatch between on-chain execution and off-chain governance, legal authority, and fiduciary responsibility. Real-world assets embed discretion, enforceability, and institutional accountability that cannot be fully specified *ex ante* in code. Approaching the problem from an institutional adoption perspective, the paper reframes tokenization as an institutional design challenge rather than a software problem, with implications for policymakers, regulators, and institutional investors.

1. Introduction

The phrase “code is law” reflects the belief that software can substitute for legal and institutional enforcement by embedding rules directly into executable code. In blockchain systems, smart contracts are often presented as self-executing agreements that remove ambiguity, discretion, and reliance on trusted intermediaries. This framing has shaped much of the early development of decentralized finance and token-based markets.

As attention has shifted toward tokenizing real-world assets—such as investment funds, credit instruments, commodities, and infrastructure projects—the limits of this paradigm have become increasingly apparent. Many initiatives have stalled at pilot stages, and large institutional allocators have remained cautious. Explanations typically focus on regulatory uncertainty or market immaturity. While relevant, these explanations overlook a deeper structural issue.

This paper argues that “code is law” fails for real-world assets because governance, legal authority, and discretion are not implementation details—they are constitutive features of institutional asset markets. Treating them as obstacles to be engineered away leads to systems that are incompatible with institutional adoption.

The analysis proceeds from the perspective of institutional investors and fiduciaries. Market-infrastructure standards are referenced not as an alternative framing, but as corroborating evidence that these constraints are structural rather than cultural or transitional.

2. The Origins and Limits of “Code Is Law”

The concept of “code is law,” popularized by Lessig, originally described how software architectures regulate behavior by constraining what users can do. In blockchain discourse, the phrase evolved into a stronger claim: that code could replace law by providing deterministic, automatic enforcement.

In digital-native contexts, this model has shown limited viability. Assets are natively on-chain, participants accept the absence of legal recourse, and disputes are resolved internally or ignored. The cost of failure is often borne individually, and systemic consequences are limited.

Real-world assets differ fundamentally. They derive value from legally enforceable claims, operate within regulatory regimes, and rely on delegated authority. In these settings, enforcement does not arise solely from execution, but from legitimacy and accountability. Code can automate actions, but it cannot establish authority, adjudicate ambiguity, or allocate responsibility when outcomes diverge from expectations.

3. Why Real-World Assets Resist Full Codification

Real-world assets are embedded in institutional environments characterized by:

- Legal jurisdictions and enforceability
- Regulatory regimes
- Contractual relationships
- Fiduciary structures
- Physical or organizational processes

These features are not peripheral. They define the asset itself. Ownership, priority, remedies, and obligations are determined through law and governance, not through execution logic alone.

Economic theory has long recognized the problem of incomplete contracts: not all future contingencies can be specified *ex ante*. As a result, residual control rights are delegated to boards, managers, trustees, courts, and regulators. Smart contracts, by contrast, require precision. They execute what is specified and ignore what is not.

Attempts to encode discretion—through oracles, governance tokens, or multi-signature controls—do not eliminate off-chain authority. They merely reintroduce it indirectly, often without the legal clarity or accountability institutions require.

4. Institutional Adoption Requirements

From the perspective of institutional investors, adoption is constrained by fiduciary and governance obligations rather than by technical feasibility. Across asset classes, institutions operate under recurring requirements that shape their willingness and ability to allocate capital:

- Clear fiduciary responsibility
- Defined decision-making authority
- Regulatory compatibility
- Auditability and transparency
- Mechanisms for exception handling

These requirements are not preferences; they are constraints. Pension funds, insurers, endowments, and sovereign investors must be able to explain decisions, manage downside risk, and demonstrate compliance. Autonomous execution without recourse is therefore not a feature, but a disqualifying characteristic.

Notably, many of these institutional requirements mirror long-standing principles articulated in global market-infrastructure standards, such as CPMI-IOSCO's Principles for Financial Market Infrastructures. This convergence suggests that institutional reluctance is not conservatism, but a rational response to structural risk.

5. Governance, Not Execution, as the Binding Constraint

In practice, the most significant failures in RWA tokenization do not arise from transaction throughput or software bugs. They arise from unresolved questions of authority:

- Who can intervene when circumstances change?
- Under what conditions can execution be halted or reversed?
- How are disputes resolved?
- Who is accountable for outcomes?

These are governance questions. Treating them as edge cases leads to brittle systems that may function in ideal conditions but fail under stress. Institutions, whose capital is long-duration and reputationally constrained, cannot adopt such systems at scale.

6. Reframing Tokenization as Institutional Design

The failure of “code is law” points toward a different design philosophy. Tokenization should be understood as institutional augmentation, not institutional replacement.

Under this framing:

- Code handles standardized, low-discretion processes
- Governance defines authority, escalation, and accountability
- Legal agreements anchor on-chain representations to off-chain rights
- Regulatory engagement is a design input, not an afterthought
- Intermediaries are reconfigured, not eliminated

Trust is not removed from the system; it is redistributed and made explicit. The role of technology is to support governance, not to deny its necessity.

7. Implications

For policymakers, this analysis underscores the importance of legal clarity and governance design over technical experimentation. For market participants, it suggests that successful RWA tokenization will resemble institutional finance more than decentralized protocols. For technologists, it implies that the most valuable innovation lies in integrating code with law, institutions, and human judgment.

8. Conclusion

“Code is law” is a compelling metaphor, but a poor governing principle for real-world assets. RWAs are institutional constructs shaped by law, governance, and discretion. Attempts to eliminate these features through automation encounter structural limits that technology alone cannot overcome.

Tokenization can succeed at institutional scale only by abandoning the premise of substitution and embracing governance as a first-order design variable. The future of RWAs, therefore, is not primarily a technical challenge—it is an institutional one.

References (selected)

- Allen, F., Gu, X., & Jagtiani, J. (2021). “A Survey of Fintech Research and Policy Discussion.” *Review of Corporate Finance*.
- Bank for International Settlements (BIS). (2024). *Tokenisation in the Context of Money and Other Assets: Concepts and Implications for Central Banks*.
- Committee on Payment and Settlement Systems (CPSS), Technical Committee of the International Organization of Securities Commissions (IOSCO), BIS. (2012). *Principles for Financial Market Infrastructures*.
- De Filippi, P., & Wright, A. (2018). *Blockchain and the Law*. Harvard University Press.
- Hart, O., & Moore, J. (1990). Property Rights and the Nature of the Firm. *The Journal of Political Economy*, Vol. 98, No. 6, pp. 1119–1158. The University of Chicago Press.
- IOSCO. (2020). *Issues, Risks and Regulatory Considerations Relating to Crypto-Asset Trading Platforms*.
- IOSCO. (2025). *Tokenisation of Financial Assets*.
- Lessig, L. (1999). *Code and Other Laws of Cyberspace*. Basic Books.
- Williamson, O. E. (1985). *The Economic Institutions of Capitalism*. Free Press.