Liquidity & Token Interchange

Problems in Computational Settlement

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Outline

1. Introduction

1.1 The Hard Problem of Settlement

Introduction to payments settlement as a computational problem; historical background.

1.2 Liquidity & Tokenisation

Definitions of liquidity, tokens, interchange, and the contemporary industry context.

1.3 Computer Science & Digital Finance

Overview of formal methods in Computer Science with application to finance.

1.4 Research Questions

Enumeration of primary research questions addressed by this project.

1.5 Structure & Contributions

Outline of subsequent sections; methodologies, publications, and key research outcomes.

1.4 Research Questions

2. Liquidity Automata

Liquidity Automata: A Computational Hierarchy of Money Forms

This chapter (and corresponding paper) will propose a correspondence between the Chomsky heirarchy of computational complexity and various monetary architectures that have successively evolved over the course of economic history, arguing that the resulting taxonomy provides a useful means of conceptualising the material distinctions.
The chapter will include a review of the canonical literature on complexity theory and monetary history, and will argue that tokenisation introduces an imperative to develop agentic systems to manage settlement risks.
Although abstract and theoretical, concepts introduced in this chapter will inform and motivate subsequent chapters.

3. Liquidity Logics

4. Liquidity Networks

5. Liquidity Schemes

6. Liquidity Agents

7. Conclusion