

Revisiting the Properties of Money

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Introduction

1. Update properties and functions of money framework.

- ▶ Introduced by Jevons (1876) and Menger (1892).

2. Reconcile economics and computer science literatures.

- ▶ Need common terminology that is still general, but granular enough to describe digital money.

3. Evaluate performance of different forms of money according to expanded framework.

- ▶ Commodity money, bills, coins, private bank money, cryptocurrencies, stablecoins, CBDCs, quantum money.

Introduction

Primary Function	Property	Commodity Money	Physical Coins	Physical Bills	Central Bank Reserves	Bank Deposits	CBDC	In-Game Currency	Cryptocurrency	Crypto with DApps	Privacy Oriented Crypto	Stablecoin	Private-Key QM	Public-Key QM
Societal or Regulatory	AML Compliant	✗	✗	✗	↙	↙	↙	↙	✗	✗	✗	!	↙	✗
	Censorship resistant	↙	↙	↙	✗	✗	✗	!	✗	✗	↙	✗	↙	✗
	Identity-based	✗	✗	✗	↙	↙	↙	✗	✗	✗	✗	✗	↙	✗
	Public	✗	↙	↙	↙	✗	↙	✗	✗	✗	✗	✗	↙	↙
	Resource efficiency	✗	↙	↙	↙	↙	↙	↙	✗	✗	✗	↙	↙	↙
	Unforgeability	↙	↙	!	↙	↙	↙	↙	↙	↙	↙	↙	↙	↙

Functions of Money

Functions of Money

- ▶ **Original functions still largely sufficient to describe digital money.**
 - ▶ Medium of exchange, standard of deferred payment, store of value, unit of account.
- ▶ **Introduce societal and regulatory objective as new function.**
 - ▶ AML compliance, censorship resistance.
 - ▶ May make form of money *less* attractive to users.

Properties of Money

Properties of Money

- ▶ **Original framework lacks many important properties of digital forms of payment.**
 - ▶ Throughput, latency, untraceability, reversibility, backup.
- ▶ **Increased scope for design induces many hard and soft tradeoffs.**
 - ▶ Reversibility versus latency, local verification versus backup, traceability versus financial crime prevention.

Conclusions

- 1. Choice of properties will drive adoption in emerging era of currency competition.**
 - ▶ Jevons-Menger properties still relevant, but not decisive.
 - ▶ Societal and regulatory objectives may impede adoption.
- 2. Unclear how CBDCs will perform in currency competition.**
 - ▶ No clear set of properties other than public and digital.
 - ▶ Unclear if central banks want to regain control of medium of exchange.
 - ▶ Central banks face new threat of losing unit of account.