



# The Digital Money Format War

Format wars can be dangerous, 'winner takes all' games. No executive at the helm of an incumbent wants to share the fate of Blockbuster or others who have found themselves on the wrong side of format history. The digital payments market could be shaping up as a format war between different representations of digital value.

The contest between physical money formats and digital formats is drawing to a close, just as streaming is taking over from physical methods of storing digital music. The future of digital money will play out across two dimensions:

- a). **Representation technology: tokens versus accounts**
- b). **Legal instrument: liability versus non-liability forms of money**



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## Representation Technology – Tokens versus Accounts

Fundamental to the case for crypto is the notion that tokens are a more advanced technology for the representation of digital value. This hypothesis needs to be examined carefully.

### The purported benefits of tokens include:

- a). **24\*7\*365 settlement:** DLT networks are 'always on' but the traditional banking system is not
- b). **Programmability:** 'smart contracts' are powerful means to embed finance in digital ecosystems
- c). **Atomic settlement:** token exchange can remove settlement risk between counterparties

Tokens are chains of digital signatures, as defined by the Bitcoin whitepaper. They are a departure from the centuries-old method of recording value through double-entry bookkeeping accounts which are designed to keep careful track of liabilities on bank balance sheets.

Payments made across accounts held at different institutions have a special characteristic: the functions of **messaging** and **settlement** are separate. First, Bank A sends a message to ask Bank B to make a payment. Then, Bank A needs to settle with Bank B through a separate channel, e.g. across accounts that the banks hold at the central bank.

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When payments are made with tokens the functions of messaging and settlement are collapsed into one. The token acts as a digital bearer instrument so when the token moves to the recipient's wallet the transaction is complete. It is argued that tokenized value exchange removes many of the inefficiencies of the account-based system, including errors, delays and reconciliation issues.

Tokenized payments may provide benefits, but there are also potential downsides. Tokens may act as digital bearer instruments, meaning that the possessor of the private key is the owner of the asset. The general trend over decades has been to remove bearer instruments from financial services due to their inherent financial crime risk. There are other problems related to the safe management of cryptographic private keys.

If we only weigh up the technical pros and cons of tokens versus accounts as alternative representation technologies we might not reach a definitive conclusion. It is probably possible to ameliorate the technical downsides of either system.

*To make further progress we need to think about the different types of digital money independently from the way in which they are technically represented.*

### **Legal Instrument: Liability Versus Non-Liability Forms**

We have considered whether digital money might be represented best as tokens or accounts and the jury is still out. To complete the picture we need an overview of the different legal forms of digital money. These instruments include:

**a). Central bank money:** this form of digital money has the special characteristic called 'finality of settlement'. This means that transfers in central bank money cannot be unwound by bankruptcy proceedings. Central Bank Digital Currency (CBDC) could be issued in either 'retail' or 'wholesale' varieties and could be expressed as either tokens or accounts. CBDC is a claim on the central bank, i.e. a liability on the balance sheet of the central bank. It is redeemable at par value on demand in national currency units.

**b). Commercial bank money:** the most familiar form of digital money is a liability on the balance sheet of a commercial bank. The digital form is the humble and familiar bank account. Although each bank has its own counterparty risk the liabilities are fungible at par value, i.e. dollars in Bank A are worth the

same as dollars in Bank B. When individual banks create their own 'coins' they are representations of commercial bank money.

**c). E-money:** in order to create competition in the digital payments market regulators created a legal framework to allow regulated non-banks to issue electronic money fully backed by commercial bank deposits. E-money has special characteristics, e.g. the inability to pay interest. It is redeemable at par value on demand in national currency units.

**d). Stablecoins:** There are a wide variety of 'stablecoin' models that currently operate in a regulatory grey zone. They purport to maintain stability against a reference currency, basket of currencies or other asset. They depart from E-money in that they are not clearly regulated, they do not offer guaranteed redeemability at par value on demand and they may not be fully backed, nor represent a direct liability on the balance sheet of the stablecoin issuer.

**e). Intangible public cryptocurrencies:** the original cryptocurrency, Bitcoin, is an intangible asset that generates no yield. It has no central issuer and in general regulators have been content to focus on cryptocurrency exchanges to interdict financial crime. In contrast with other forms of digital money, Bitcoin is not a liability on any balance sheet. It is not redeemable at par value on demand, indeed it is known for its volatility.

**f). Others:** There are many other possible forms of digital money including community currencies, corporate currencies and the wide variety of reward points. Most of these represent some form of liability. This might be considered as the 'left field' of digital value – it is possible that a dominant form of digital money could arise from this category, but the more likely contenders are listed above.

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## *THIS THEN BEGS THE QUESTION OF WHETHER A TOKENIZED FORM OF COMMERCIAL BANK MONEY MAY EMERGE ON A MULTI-INSTITUTION AND MULTI-JURISDICTIONAL BASIS.*

### Intersections of Legal Form and Technology

As a result of the analysis above we have two representation technologies: accounts and tokens. We also have six possible varieties of digital money. If we wanted to be technologically neutral we would argue that each of these legal forms might be represented **either** as tokens or accounts, i.e. the legal instrument is independent of the technology used to represent it.

Some of the intersections are interesting. For example, the concept of an account representation of Bitcoin jars for the following reasons:

- a). Accounts are designed to track liabilities and Bitcoin is not a liability
- b). Accounts are the books and records of an intermediary while the Bitcoin whitepaper aims for a world without intermediaries

While regulatory interest in CBDC was stimulated by the development of bigtech stablecoins, some argue that they should be represented through the more familiar technology of accounts. After all, CBDCs are promises to pay by the central bank that live on its balance sheet. Others would argue that account-based CBDC designs forgo the programmability benefits of tokenization.

The regulation of stablecoins has yet to be determined and it is a real test of whether regulators will adopt a technologically neutral approach. It could be argued that stablecoins are (or should be) nothing more than E-money expressed as tokens. If this were the case then all of the regulations applying to E-money would apply to stablecoins: they could not pay interest, they would be fully collateralized, they would be direct claims on the stablecoin issuer and the user would expect redeemability at par value on demand in national currency.

The stablecoin community might prefer a separate regimen for their instrument as few of the current schemes fit within the requirements of E-money.

There is a balance to be struck – how do we keep the potential benefits of tokenization without creating a destructive regulatory arbitrage? The last thing that regulators would want is for E-money operators to ‘invert’ to more permissive stablecoin regimens, e.g. if they no longer needed to fully collateralize their instruments they could potentially convert large amounts of client monies to private profit.

The final intersection we will examine is the case of commercial bank money, which is currently expressed as accounts. The limited exception is the development of single bank ‘coins’ that represent deposits with that bank. These single bank coins are like casino chips – only of use within the establishment and therefore of limited utility as general money.

**This then begs the question of whether a tokenized form of commercial bank money may emerge on a multi-institution and multi-jurisdictional basis.** Such an instrument would have potentially interesting characteristics – the benefits of tokenizing a form of money that is a direct claim on a regulated issuer, redeemable at par value on demand in national currency units. Indeed, the emergence of tokenized commercial bank money might be seen as a ‘third way’ as an alternative to bigtech stablecoins and CBDCs, both of which entail a host of downstream consequences.

### Winner Takes All?

The platform economy exhibits ‘winner takes all’ tendencies but in the case of digital money there is probably space for a number of contenders. After all, new roads create more traffic, not less. The digital payments market is likely to grow significantly.

The real question for regulators is to ensure that the competition between different formats for digital money proceeds on a level playing field.

There are significant opportunities for accidents through the creation of regulatory arbitrages between different legal regimens. Poorly designed CBDC could emerge as a ‘category killer’ digital payments method that drives out the private sector entirely, or concentrates financial services unintentionally into bigtech platforms. Good regulation will be facilitated if we understand that legal instruments are independent of technological representations of those instruments.

We need to find a way to capture the potential benefits of tokenized money in a controlled way as it is likely to join account-based digital money as a foundation for a digital economy that is still in its infancy. Rather than a format war, there is an opportunity and compelling need for governments, banks, fintechs, bigtechs and a broader range of stakeholders to collaborate in the development of digital money.

