

## Digital and Cryptocurrencies: 21st Century Money?

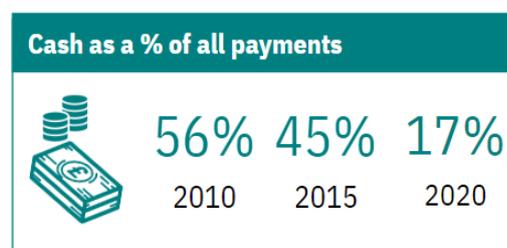
*By Ian McCafferty, Senior Adviser and former member of the BoE Monetary Policy Committee*

**In recent years, emerging technology has begun a revolution in the way people are thinking about money. Digital cryptocurrencies, such as bitcoin or ethereum, have become a hot topic. With interest intense, central banks have begun to study the issue and regulatory authorities are becoming more involved. How are digital currencies likely to evolve, and will they become the default money for the 21st century?**

Digital money – money that exists not in physical form, such as notes and coin, but only as a data entry in a computer ledger – is not new. Every pound held in a bank account is digital money. Holdings and transactions are recorded in the bank’s computers, but the money in those accounts is not backed one-for-one by cash holdings and is not backed by the state – it is not covered by that familiar Bank of England promise to “pay the bearer”. Such money is not “public money” – issued and backed by the state, as cash notes and coin are. It is “private money”, created and managed by the private sector commercial banks. This digital money is effectively created whenever a commercial bank creates a new loan and credits the borrowers bank account with the loan amount, creating new money.

In modern economies, digital money predominates – about 95% of the money used in transactions in the UK is held in the form of a bank account, rather than in notes and coin. Virtual transactions – through debit and credit cards, and payment orders – now account for over three-quarters of all payments. So digital money, and digital transactions, have been with us for some time. The first UK credit card – offered by Barclays – was issued in 1966. The National GiroBank, created in 1968, was the first UK bank designed with computerised operations at its heart, while the first full debit card appeared in 1987, again issued by Barclays.

More recent developments in computer technologies, and in particular distributed ledger blockchain technologies, which effectively record the presence of a digital asset, have driven the emergence of new forms of digital currency. Alongside cryptocurrencies – bitcoin and its lookalikes – we also have stablecoins, such as Facebook’s proposed global currency previously known as Libra, now rebranded as Diem. Furthermore, a number of major central banks, including the Bank of England, are examining whether they should themselves issue a new form of money – a Central Bank Digital Currency (“CBDC”).



Source: UK Finance “UK Payment Markets 2021”.

Clearly, a potentially disruptive revolution in the way that we hold and transact money is underway. Supporters of digital currencies claim they will become dominant, creating a new money and payments infrastructure for the 21st century. Are these claims realistic? How is the digital currency universe likely to evolve, and what is its likely future?

## Characteristics of digital money

For any currency – digital or otherwise – to be an efficient form of money, it needs to act as a unit of account, a medium of exchange and a store of value. For these to be achieved, a currency needs to be of relatively stable value, widely accepted, divisible, and of limited but adjustable supply, to meet changing transaction needs.

The new digital currencies aim to meet these requirements in a number of different ways. Almost all are created using blockchain, a decentralised distributed ledger blockchain technology. This provides widespread access to network users, and creates transparent and unchangeable records of digital transactions, and works without involving any third-party intermediary. It offers benefits over a traditional centralized network, including increased system reliability and privacy. When encryption technology is also employed, to make transactions even more secure and secret, the digital currency becomes “crypto”. So, not all digital currencies are crypto, though all cryptocurrencies are digital. Beyond this common use of technology, the essential characteristics of digital currencies vary widely. The most important, in determining their use as money, are:

- Whether they are asset-backed or linked, to calibrate and stabilize their value; and
- Whether they are privately issued and managed, or public (issued and backed by a central bank).

As yet, no central bank has issued a new digital currency, but several, including the Bank of England, are considering whether it would be of benefit to the monetary system if they were to do so.

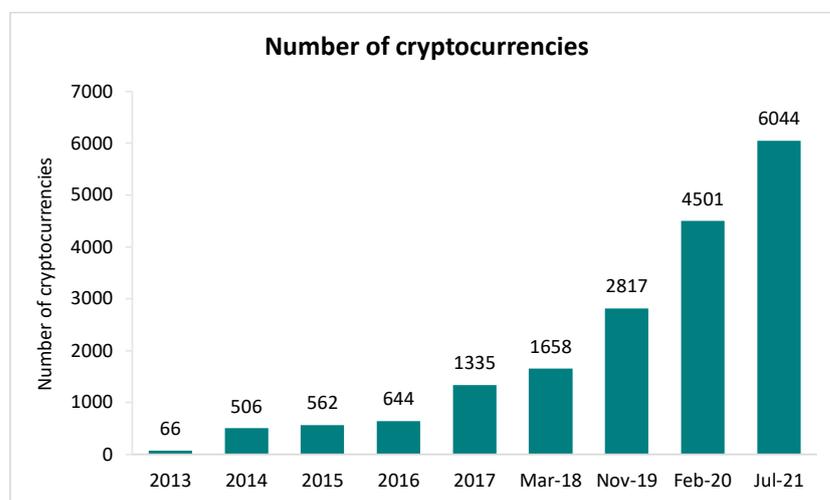
## The private cryptocurrency market

The number of cryptocurrencies in circulation has risen from under 500 at the start of 2015 to over 6,000 by mid-2021. However, the market is highly concentrated, with the top ten by value representing some 88% of the total market capitalisation, and bitcoin alone almost 50%. Market capitalisation for cryptocurrencies has risen from under \$20bn at the beginning of 2017 to a peak of \$2.16 trillion in April 2021, before falling to \$1.59 trillion in early August.

The market is essentially made up of two sorts of cryptocurrency. The vast majority of currencies, including bitcoin, ethereum, and dogecoin, are not asset-backed or linked to any existing public currency. Their value is therefore determined solely by sentiment and short-term demand and supply, making their values unstable.

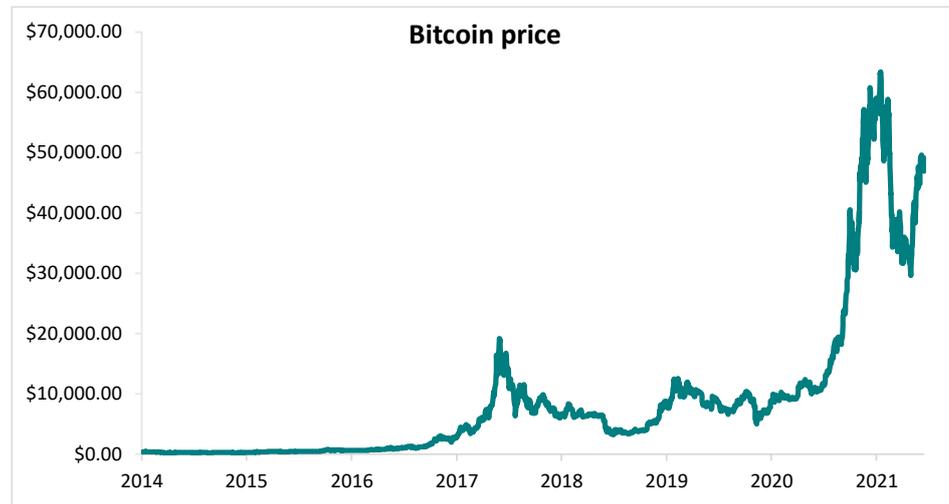
For bitcoin – the largest cryptocurrency by market capitalisation – it has been a rollercoaster ride in recent years. From June 2019 to September 2020, its price had been at around \$10,000. It then started to rise rapidly, reaching a peak of

some \$63,500 in April 2021, before falling by over 50% to a low of around \$29,600 by late July. It then recovered to around \$50,000 by early September. This volatility seems to have been driven by a combination of the enthusiasm of new traders, often following technical chartist trading strategies, and high-profile commentary in the media. Elon Musk, and others, have Tweeted heavily about the currency. Musk’s Tweets have swung from enthusiasm – as Tesla stated that it would accept bitcoin in payment for its cars and was reputed to have bought some \$1.5bn worth of the currency – to more caution, appearing to question bitcoin’s value and prospects, and in particular its green credentials



Source: CoinMarketCap via Statista ([www.statista.com](http://www.statista.com)).

Though a number of companies are now saying that they are preparing to accept such cryptocurrencies as payment for goods and services, the very volatility in their value makes such transactional use risky, and difficult. Their main use at present is as a speculative investment asset, or as a conduit for money that the owners want to conceal from the authorities.



Source: Coindesk ([www.coindesk.com](http://www.coindesk.com)). Data is since 11/03/2014 to 02/09/2021.

As these cryptocurrencies have become more widely traded, they have attracted the scrutiny of financial regulators. Bitcoin has effectively been banned in China, while, at the other extreme, El Salvador has adopted bitcoin as legal tender, alongside the US dollar. For most countries, regulation sits somewhere between. There are restrictions around the use of bitcoin for illegal purposes, such as money laundering and drugs, but otherwise, trading is legal, though a number of countries, including the UK, have outlawed trading in cryptocurrency derivatives. The major central banks continue not to recognise bitcoin and other cryptocurrencies as money, but view them as speculative assets, with little or no regulatory protection, and issue regular warnings of their risks and dangers.

### Stablecoins now emerging

A subset of the cryptocurrency universe – with a market value of around \$100bn – involves linking the cryptocurrency to a more stable source of value – usually the US dollar, or other currency. Some are backed by commodities – precious metals, oil or property. The asset backing is usually held by an independent administrator, as reserves; the administrator is regularly audited to certify that the fixed ratio between the reserve and the coin (typically 1:1) is maintained.

This subset is termed “stablecoins”, so called as the asset-backing provides a much greater stability of value. In addition, many stablecoins do not employ cryptography, making their ledgers much more transparent. Examples of stablecoins include Tether, Binance USD, Diem (the successor to the Facebook-inspired Libra), as well as JPM Coin, the stablecoin issued by JP Morgan. The purpose of these stablecoins is not to create a tradeable speculative asset, but to use the new technology to simplify and speed up the transaction and payments process for goods and services, relative to more traditional banks.

These characteristics make such stablecoins more akin to true money, as their value is more stable, and they can be more easily used for transactions for goods and services. They potentially offer a more secure and lower cost system for monetary transactions than we have at present. Their issuers are also more closely regulated than for other cryptocurrencies, and though such regulation has until now been lighter and less comprehensive than for traditional banks, a debate is brewing as to whether they should be regulated more like banks in future. For all the market hype about bitcoin and others, these stablecoins look to be more likely to emerge as significant new forms of money in coming years. They are likely to sit alongside, or maybe even displace, existing bank accounts.

### Will central banks also issue digital currency?

Over 30 central banks are also seriously studying whether there is a role for a public digital currency (central bank digital currency, or CBDC) – issued and managed by the central bank itself. They see the benefits of CBDCs in increased efficiency for domestic (retail and wholesale) payments, and a reduction in the frictions involved in cross-border payments. If extended to the domestic retail sphere, a CBDC would supplement their issue of notes and coin, but as the use of cash diminishes, may well gradually overtake it. Public digital currencies, issued by the central

banks, would naturally offer the backing of a claim on the central bank itself, as well as the credibility and the stability of value required of money. However, for any central bank issuing a CBDC, there are challenges to be faced. A CBDC would be perceived as safer not only than other stablecoins, but also than existing bank accounts, which are protected by claims on the commercial bank issuer, not the central bank itself. Why hold money in an account in a bank which can, in extremis, face default, when the option of holding it with the central bank in the form of a CBDC is available?

Any rapid substitution of CBDC holdings for existing bank accounts would put the banking system at risk. At heart, current banking systems, which have been in existence for almost 200 years, allow banks to accept deposits (their balance sheet liabilities) from which they generate loans (their balance sheet assets). Any threat to their liabilities would constrain their ability to generate loans, and in extremis would threaten their continued existence. Central banks would then need to assume responsibility not only for all money issuance (at present they issue only notes and coin, and other money creation is through the commercial banking system), but also for all aspects of credit delivery – not only the generation of the loan itself, but also the allocation and risk decisions behind each loan. Unless this problem can be solved, it is likely that any central bank deciding to issue a CBDC will need to impose serious restrictions on its uses and users. Holdings by the public would have to be limited, leaving space for the development and adoption of privately-issued stablecoins, by existing banks as well as by new issuers.

### How will digital money evolve?

The new technologies that underlie the issue and management of digital currencies offer significant benefits in terms of low-cost, easy and secure ways of holding, transferring and spending money, both domestically and internationally. As secure, liquid stablecoin markets develop, frictionless exchange between different currencies is likely to become the norm. Such digital currencies are therefore likely to become more widely issued and adopted, by both new entrants to the market and more established operators, such as existing banks, and over time are likely to become the dominant transaction and payment medium for the 21st century.

Neither stablecoins nor central bank digital money necessarily make the less-regulated cryptocurrencies redundant. Those who want a gamble, those who distrust authority, or those who want to hide their assets from the authorities, may still prefer them, but as safer digital currencies emerge, many of the early entrants may find that their attraction, use, and acceptability for payment is diminished, and that is likely to have implications for the desirability and hence price of bitcoin and its lookalikes in the unregulated sphere.

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#### London Wall Partners LLP

Salisbury House  
London Wall  
London EC2M 5QQ  
T +44 (0) 20 3696 6801  
F +44 (0) 20 7117 1177  
W [www.londonwallpartners.com](http://www.londonwallpartners.com)

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