

14.12.2020

BANKING AND FINANCE

DIGITAL CENTRAL BANK MONEY: FROM BITCOIN TO THE DIGITAL EURO

With its [Report on a digital euro](#), the ECB has fanned the debate on digitalizing money. But just what money will look like in the 21st century has not been decided yet. Central banks, tech companies and decentral cryptocurrencies are competing to innovate in this area. This article provides an overview of the current debate on whether and how to introduce digital central bank money.

I. Digital money in the sights of central banks

Across the world, central banks are discussing the potential of digital money, a discussion driven by the rapid development of private digital currencies. According to the [Bank for International Settlements \(BIS\)](#), 80% of all central banks are currently addressing what are termed CBDCs (central bank digital currencies), and 20% of central banks surveyed consider it likely that these will be introduced within the next six years. The ECB has emphasized that it has not taken a final decision on this matter. But at the same time, it is anticipating scenarios which might necessitate the introduction of a digital euro. The potential grounds to do so, the ECB states, would include advancing the digitalization of European industry and strengthening the euro's importance internationally, as well as possible competition from private cryptocurrencies or foreign digital central bank money. Other countries such as China have already gone beyond this: the "Digital Yuan" (officially the "digital currency electronic payment" (DCEP)) is being tested through small-volume distribution by lottery to the population; over a particular period, the digital money can be used to pay selected traders.

II. Categorizing CBDCs

Despite the attention that the Digital Yuan has received, the user experience does not live up to the hype, according to initial reports. Paying by Digital Yuan differs from conventional mobile payment solutions in only minor ways: a payment is triggered by touching a mobile phone or scanning a QR code. It may not be evident to outsiders, but legally speaking there is a fundamental difference: in the one case, genuine central bank money is transferred, but in the other, only the claim to payment of the money. To give a better feel for this difference, we'll first differentiate CBDCs from cryptocurrencies and book money.

1. How CBDCs differ from decentral cryptocurrencies

CBDCs are frequently compared with cryptocurrencies such as bitcoin. But apart from both being digital, they in fact have little in common. Although bitcoin was originally conceived as a form of digital cash, in legal terms it qualifies neither as cash nor as any other variant of money. This is because bitcoin is not issued by either a bank or a central bank. Instead, it is calculated by computers and stored and traded in a decentrally organized booking system, known as a blockchain. So there is no instance that controls bitcoin volume, sets its value, or organizes its trading.

To date, bitcoin has not established itself as an alternative to cash either. There are two reasons for this. The first is that bitcoin's exchange rate is highly volatile, and this automatically lends a speculative aspect to every payment made with it. Such exchange rate fluctuations are risky and impractical in large-scale transactions and long-term agreements, in particular.

But bitcoin's usefulness for small, everyday payments is limited as well, owing to the costs involved: last year, fees of several euro per transaction were to be expected in every bitcoin transfer, the exact sum depending on the

network load. For large transactions, this is remarkably cheap, but for small everyday transactions the fee quickly exceeds the actual sum to be paid.

The result of all this is that bitcoin currently functions more as an object of investment than an instrument of payment. Accordingly, there has been a shift in the image of digital cash: bitcoin now views itself as “digital gold”, and in this capacity it has been increasingly gaining recognition. But even if investors are gradually becoming more professional, this cryptocurrency remains controversial. Bitcoin investments still need to be seen as risky speculative deals.

2. How CBDCs differ from stablecoins

What are termed “stablecoins” resemble conventional instruments of payment to a much greater degree. Stablecoins are cryptocurrencies backed up by assets, mostly State-issued currencies, raw materials, or other cryptocurrencies. For this reason, their value remains relatively stable. But to create this link between a stablecoin and real value, an intermediary is required: this intermediary both issues the stablecoin and ensures that it is covered by real value. Frequently, therefore, stablecoins qualify as electronic money.

Stablecoins are taken to a whole new level where they are issued by companies with global reach (such currencies being termed “global stablecoins”). In terms of publicity, one striking example of this has been the cryptocurrency initiated by Facebook, Diem (originally called Libra). Facebook’s enormous user basis caused politicians, regulators and central banks to worry that the currency would be rapidly adopted on a mass scale across borders and even come to replace State-issued currencies.

It is inevitable that any global stablecoin issuer will control significant volumes of money and government bonds with which the issuer backs up its stablecoin. This gives the issuer crucial influence, putting at risk the monetary sovereignty and financial stability of entire nations. What is more, system-wide problems – whether of a technical, economic or some other nature – would have far-reaching implications for payments. The issuer would also acquire sensitive information on user behaviour with regard to payment, which would raise data protection concerns.

To stave off such systemically relevant risks, special rules for global stablecoins are being developed internationally (see the [Financial Stability Board’s report](#) and the [European Commission’s Proposal for a Regulation on Markets in Crypto-assets \(MiCA\)](#)). At the same time, global stablecoins are driving the rekindled discussion around introducing CBDCs.

3. How CBDCs differ from book money

In contrast to stablecoins, CBDCs are not just covered by money, they *are* central bank money. They have taken on a new digital guise, however. The sole conventional forms of central bank money have been cash and credit at the central bank. Currently, the only one of these two forms that is generally available has been cash, while accounts with central banks have been limited to commercial banks.

The great advantage of central bank money is that it is risk-free. For cash as a statutory instrument of payment under Article 128 I 3 TFEU, this is obvious. But claims against the central bank are secure as well. A claim against the central bank is viewed as being as good as cash.

The situation is different regarding credit on a current account with a commercial bank. On an everyday level, it will quickly appear that book money is “real” money which is just being distributed via commercial banks. In reality, however, the demand deposit in a bank account merely documents a claim to payment against the commercial bank. This is a crucial difference, because these claims are subject to a risk of default, despite the deposit protection required by law.

By contrast, a generally available CBDC would be central bank money in the same way as cash is, but without the physical limitations. In particular, storing and transferring major sums would be possible electronically and cheaply. Moreover, a CBDC is likely to perform more efficiently in cross-border transactions.

III. Risks of CBDCs

The idea of generally available central bank money is not new. Until now, however, it has faced the fear that such digital currency would endanger the commercial bank sector, as a CBDC’s existence would compete with commercial banks’ services. It might be more attractive for individual investors to withdraw their deposits from their business accounts and convert them without risk to CBDCs.

This effect would impact not just commercial banks but the entire financial services industry, because a lack of deposits would affect commercial banks' options in granting loans. Credit squeezes or more expensive loans would be the consequence, putting a brake on economic activity as a whole. Such a money drain would go viral in a crisis, where there would be a strong incentive to convert deposits to central bank money. Were this process to be possible online at the click of a mouse, the risk of bank runs would be increased enormously, endangering the stability of the financial system.

In addition to the need to protect the two-tier banking system, objections in relation to monetary policy have also been raised against a generally available digital euro. Should such a currency spread globally and displace local currencies, it is conceivable that negative economic reactions would ensue. Above all, the digital euro might rise in price, thus potentially reducing the competitiveness of countries in the European Economic Area.

IV. Features of the digital euro

The risks set out above could be countered by designing the digital euro accordingly. There is major leeway in this respect. With regard to the ECB report, we here sketch out selected aspects.

- › **Availability:** The ECB is considering restricting the digital euro's availability in two respects. Firstly, the Bank is considering caps to prevent funds being drained from commercial banks. Secondly, geographical limits are under consideration. These would help stop foreign currencies from being squeezed out.
- › **Negative interest:** To stop the digital euro from replacing commercial bank money, negative interest on CBDC credits is also being discussed. This could also be combined with a CBDC cap and/or staggered according to the volume of digital euros held.
- › **Transferability** Structurally, the digital euro could be either account-based or given the form of a digital token. In the first scenario, verification would be based on the holder's identity, while in the second it would be based on the identity of the money. CBDC tokens would be more like digital cash and could be transferred directly. By contrast, an account-based solution would be comparable with the central bank's book money.
- › **Programmability:** A key advantage to digital currencies is the fact that they can be programmed. Payment processes can be automated and exchange relations synchronized by using smart contracts. For the growing networking of physical objects (IoT sector) and the token economy, especially, the digital euro's programmability would be key. But the ECB has remained vague on this point to date. (In detail, however, please see [German Federal Bank, "Money in programmable applications".](#))
- › **Anonymity:** The report is far clearer on the fact that digital euro payments will not proceed on a fully anonymous basis. This is to prevent financial crime and terrorist financing. At most, it will be possible to keep small payments anonymous up to a certain threshold.
- › **Offline use:** The ECB has emphasized that the digital euro should be usable offline as well. One way to facilitate this would be enable the digital euro to be downloaded and stored on a physical storage device.

V. Conclusion

Even after the ECB's report, a number of questions relating to the digital euro remain. All the same, several things have become clearer. Firstly, it has become evident that the digital euro's introduction is increasingly likely. It should be noted, however, that in any event a potential introduction would take years.

Secondly, the ECB has made it abundantly clear that commercial banks will remain in existence and continue to play a key role. Customer Services, such as customer identification, setting up customer interfaces, and storing private keys are better undertaken by commercial banks than the ECB. One further option would be for private banks to be involved in issuing the digital euro. Hybrid approaches are being hotly debated. These would see the ECB merely opening interfaces for private banks, the latter then distributing the digital euro to the population. The private sector would then remain largely in charge of the payment infrastructure surrounding the digital euro.

EXPERTISE

Banking and Finance

Capital Markets

Digital Future

Financial Investors

EXPERTS

Dr. Helge Kartz

Dr. Maximilian von Rom

Dr. Viktor Gorlow