

Have we finished with cash?

Chief economist's comment

Author: Paul Donovan, Chief Economist, UBS GWM, UBS AG London Branch

- Most money in an economy is not printed by the central bank, it is produced by the private sector. At the moment, digital forms of money in the economy are private sector generated. The declining use of cash means that central banks' "market share" of money creation and the economic influence it offers is in decline.
- Central banks are looking at introducing their own digital currencies. Like cash these would be liabilities of the central bank. Today's digital currencies are liabilities of private sector banks with a credit risk.
- Central bank digital currencies would not be crypto. It seems unlikely they would use distributed ledgers / blockchain. Unlike so-called stablecoins they would carry no private sector risk.
- Each central bank digital currency is likely to have unique design characteristics. Central banks will have to put in place guards to make sure that there is still a role for private sector banks.

What are central bank digital currencies?

In 2017, cash ceased to be the main method of payment in the UK. In Sweden, some bank branches will no longer accept cash. The number of automatic teller machines (ATMs) in the euro area fell 3.5% in 2019. People just are not using central bank printed money in the way that they used to. So what have they been using?

The answer is simple. People are using notes and coins less and less, and increasing the use of digital money. We wave debit cards and mobile devices around with the reckless abandon of a first year student at Hogwarts trying out a wand, magically paying for things without ever having to touch cash. But the important point about digital cash is that it is a private sector form of money. If you hold money electronically in a bank account, that money is a claim on (or

liability of) your bank. It is not a claim on the central bank. If the bank fails then your money disappears, unless there is some kind of insurance scheme in place. In contrast, cash in circulation is a liability of the central bank.

What this means is that the form of money that is directly produced by the central bank has become less and less important in recent years. Private sector produced digital money, over which central banks have only indirect control, has become more and more important. In other words, central banks have lost "market share" of the money in an economy. If central banks want to stay relevant as cash becomes less relevant, they might have to consider entering the world of digital money. This is why central bank digital currencies (CBDC) are being discussed.

This report has been prepared by UBS AG London Branch. Please see important disclaimers and disclosures at the end of the document.

How do CBDCs work?

In economic terms a CBDC is the same as an existing physical currency. It is a liability of the central bank, just as notes and coins are liabilities of the central bank. It can be held by ordinary citizens of a country. It can be used to pay for things. It is identical in every respect to the currency of a country that exists today—the only difference is that it is held in digital format rather than physical format.

Perhaps the easiest way to think of a CBDC is that it would allow private citizens to have a bank account with the central bank. In reality the citizen does not have to actually hold an account with the central bank, but the economic effect is the same. By holding a CBDC, the individual has no private sector risk, in the way that they do when holding a bank deposit (which is a private sector digital currency).

Are CBDCs crypto?

The simple answer to this question is “no.” CBDCs will be proper currencies, interchangeable with notes and coins in circulation and accepted for tax payments. Crypto have none of those characteristics. Unlike crypto there will be no wild swings in value against fiat currency (proper currency), because CBDCs are proper currency. The supply of CBDC can go up and more importantly can go down, according to the central bank’s policy to maintain the spending power of the currency.

The CBDCs are not like so-called stablecoins. A stablecoin is a claim on the stablecoin issuer. The stablecoin owner has to trust that the issuer in turn has enough claims on the central bank (i.e., holds proper currency) to match the amount of stablecoin issued. That means there is a private sector risk if the stablecoin issuer lies about the amount of their holdings of proper currency. With a CBDC the owner bypasses the stablecoin entirely and holds the claim on the central bank themselves.

There is no necessity for CBDCs to have a distributed ledger system (i.e., blockchain). China’s experimental digital currency is not based on blockchain (see box). As central banks would want transactions using a CBDC to be very rapid, and as they presumably would want to increase the number of transactions over time, a distributed ledger may not be that attractive. Further, given the rather toxic environmental consequences of most crypto, the trend toward environmental sustainability in government policy around the world may argue against CBDCs using crypto as a model.

China's CBDC (Yifan Hu, Chief Investment Office China)

China has been experimenting with a CBDC, known as DC/EP – Digital Currency / Electronic Payment. In April 2020, four cities started to trial different forms of a CBDC. The differences between the trials are mainly about how payments are made (via card, smartphone, etc.).

The main aim of the CBDC appears to be to replace some cash in circulation (exchanging one form of central bank money for another). The CBDC does not earn interest, just like cash. Six banks act as distributors, depositing reserves with the Peoples’ Bank of China to exactly match the CBDC they distribute. The design allows consumers to hold the central bank money in one of six digital “wallets”. This is something that consumers are used to in China, as in practical terms using the CBDC to buy things is very similar to existing private sector digital payment schemes like We Chat Pay. Indeed, the CBDC could be seen as an attempt to increase competition with existing digital payments. The difference is that the means of payment is a liability of the central bank, and so there is no private sector risk involved. The use of the banking system means that there is no distributed ledger—there is no blockchain-based process to verify transactions in the current pilot schemes (although in theory a blockchain-based approach could be used in the future if transaction speeds were to improve).

China is one of the most advanced countries in implementing a CBDC, and intends to use some form of CBDC at the Winter Olympics in 2022.

Are they a global currency?

CBDCs will still be national currencies. Because each banking system is different, the structure of the CBDC will differ from country to country. This means that there is no real “first mover” advantage to producing a CBDC. CBDCs are likely to emerge when local circumstances allow, and be structured to suit the local financial system.

There is an advantage to being able to exchange different currencies that are held in CBDC form. However, there may be a reluctance to allow foreigners to own another country’s CBDC. Smaller countries might find that they “digitally dollarize” if their citizens were able to hold accounts at the US Federal Reserve, for example. Everyone in the country could reject the national currency and hold digital dollars instead. That could be very disruptive for financial stability.

As already noted, the design and restrictions placed on CBDC are likely to be country specific. With cooperation, it may be possible to exchange one CBDC for another directly.

The alternative option would be to change the CBDC for a private sector digital currency (e.g., a dollar held at a private bank), and exchange that for another country's private sector digital currency.

What are the main issues?

There are lots of implications from creating a CBDC. Some of the more significant are:

- *Will banks survive?* If people can hold CBDC at no risk, why hold a bank deposit? CBDCs could cause deposit flight from banks to the central bank. As that would undermine the provision of credit to the economy, CBDCs are likely to be structured to help banks retain deposits. Putting a limit on the amount of CBDC an individual can hold or not paying interest on CBDC deposits could help achieve that.
- *Will central banks increase their control over money?* CBDCs can return the importance of central bank issued currency, reducing the role of private sector issued currency. That reduces the role of banks, but also of alternatives to currency like crypto and stablecoins. In a sense this is turning the clock back—returning money creation to the situation that existed in the past, when cash (and thus central banks) had a larger share of the money issued in an economy.
- *Could CBDCs create new forms of stimulus?* In theory CBDCs could give central banks more options to stimulate demand. A central bank could charge negative interest rates on deposits, or even credit people's accounts with money but threaten to remove it if it is not spent within a certain time period.¹ The problem with such measures is that a CBDC could either be converted into cash (if you want money from the central bank) or a private digital currency (if you want the convenience of a digital form of money). A person could relatively easily evade attempts to force them to spend. As central banks would be looking to increase the market share of a CBDC, putting in place policies that would reduce that market share would seem counter-productive. A CBDC with a centralized ledger would allow a central bank to trace where money is going with certainty; this would allow the central bank to monitor whether broader policy objectives (e.g., lending targets) are being met.
- *Does a CBDC increase inequality?* One problem with CBDC is that not all groups in society will be willing or necessarily able to hold it. Today over 5% of US households do not have bank accounts, i.e., do not have access to private sector digital money. Such people

are cash dependent, and less likely to hold a CBDC. This group is likely to be disproportionately lower income. In Sweden fewer than 10% of the population regularly use cash, but the group that do use cash are disproportionately elderly. They are also more likely to be rural. Unless carefully managed, a CBDC may increase the "digital divide" in the economy.

- *Will tax evasion be reduced?* Physical cash is hard for a government to monitor. Digital currency (public or private) is easier to monitor. The Italian government has sought to encourage payments using private sector digital currency explicitly to limit tax evasion, for instance. If CBDCs replace cash, it could reduce tax evasion. If CBDCs replace private digital currency, there is no change to the effect on tax evasion.
- *Is "Big Brother" watching you?* Governments could increase knowledge of their citizens' activities. If CBDCs are widely used, in theory the government could discover a great deal about an individual's life simply by monitoring the payments that individual makes. Indeed, it is plausible that a government could prevent citizens from purchasing goods or services. This already happens with private sector digital money, where banks will prevent transactions from taking place if they consider spending patterns to be unusual. The difference is that a government might prevent transactions for other reasons. Safeguards could be put in place to reduce the risks of such a "Big Brother" scenario, but consumers would need to have confidence that those safeguards would be observed.

CBDCs are coming

CBDCs are likely to start becoming part of individual economies' payment systems in the coming years. Central banks need to enter the world of digital currency, as the use of the cash they supply declines—although cash is likely to exist for a long time to come. CBDCs will all have unique national characteristics, and the design and technology will vary from country to country. The economic implications will therefore need to be assessed on a case-by-case basis, as they are introduced.

¹ In March 1999 the Japanese government issued spending vouchers worth JPY 20,000 to families and the elderly, in an attempt to boost spending. The vouchers had to be used within six months. This is similar to a central bank or government issuing CBDC, but taking it back if not spent within a certain time period. In Japan's case the stimulus impact on spending was limited. Many people appear to have used the vouchers instead of yen to buy what they would have bought anyway, and saved yen instead.

Appendix

UBS Chief Investment Office's ("CIO") investment views are prepared and published by the Global Wealth Management business of UBS Switzerland AG (regulated by FINMA in Switzerland) or its affiliates ("UBS").

The investment views have been prepared in accordance with legal requirements designed to promote the **independence of investment research**.

Generic investment research – Risk information:

This publication is **for your information only** and is not intended as an offer, or a solicitation of an offer, to buy or sell any investment or other specific product. The analysis contained herein does not constitute a personal recommendation or take into account the particular investment objectives, investment strategies, financial situation and needs of any specific recipient. It is based on numerous assumptions. Different assumptions could result in materially different results. Certain services and products are subject to legal restrictions and cannot be offered worldwide on an unrestricted basis and/or may not be eligible for sale to all investors. All information and opinions expressed in this document were obtained from sources believed to be reliable and in good faith, but no representation or warranty, express or implied, is made as to its accuracy or completeness (other than disclosures relating to UBS). All information and opinions as well as any forecasts, estimates and market prices indicated are current as of the date of this report, and are subject to change without notice. Opinions expressed herein may differ or be contrary to those expressed by other business areas or divisions of UBS as a result of using different assumptions and/or criteria. In no circumstances may this document or any of the information (including any forecast, value, index or other calculated amount ("Values")) be used for any of the following purposes (i) valuation or accounting purposes; (ii) to determine the amounts due or payable, the price or the value of any financial instrument or financial contract; or (iii) to measure the performance of any financial instrument including, without limitation, for the purpose of tracking the return or performance of any Value or of defining the asset allocation of portfolio or of computing performance fees. By receiving this document and the information you will be deemed to represent and warrant to UBS that you will not use this document or otherwise rely on any of the information for any of the above purposes. UBS and any of its directors or employees may be entitled at any time to hold long or short positions in investment instruments referred to herein, carry out transactions involving relevant investment instruments in the capacity of principal or agent, or provide any other services or have officers, who serve as directors, either to/for the issuer, the investment instrument itself or to/for any company commercially or financially affiliated to such issuers. At any time, investment decisions (including whether to buy, sell or hold securities) made by UBS and its employees may differ from or be contrary to the opinions expressed in UBS research publications. Some investments may not be readily realizable since the market in the securities is illiquid and therefore valuing the investment and identifying the risk to which you are exposed may be difficult to quantify. UBS relies on information barriers to control the flow of information contained in one or more areas within UBS, into other areas, units, divisions or affiliates of UBS. Futures and options trading is not suitable for every investor as there is a substantial risk of loss, and losses in excess of an initial investment may occur. Past performance of an investment is no guarantee for its future performance. Additional information will be made available upon request. Some investments may be subject to sudden and large falls in value and on realization you may receive back less than you invested or may be required to pay more. Changes in foreign exchange rates may have an adverse effect on the price, value or income of an investment. The analyst(s) responsible for the preparation of this report may interact with trading desk personnel, sales personnel and other constituencies for the purpose of gathering, synthesizing and interpreting market information.

Tax treatment depends on the individual circumstances and may be subject to change in the future. UBS does not provide legal or tax advice and makes no representations as to the tax treatment of assets or the investment returns thereon both in general or with reference to specific client's circumstances and needs. We are of necessity unable to take into account the particular investment objectives, financial situation and needs of our individual clients and we would recommend that you take financial and/or tax advice as to the implications (including tax) of investing in any of the products mentioned herein.

This material may not be reproduced or copies circulated without prior authority of UBS. Unless otherwise agreed in writing UBS expressly prohibits the distribution and transfer of this material to third parties for any reason. UBS accepts no liability whatsoever for any claims or lawsuits from any third parties arising from the use or distribution of this material. This report is for distribution only under such circumstances as may be permitted by applicable law. For information on the ways in which CIO manages conflicts and maintains independence of its investment views and publication offering, and research and rating methodologies, please visit www.ubs.com/research. Additional information on the relevant authors of this publication and other CIO publication(s) referenced in this report; and copies of any past reports on this topic; are available upon request from your client advisor.

Options and futures are not suitable for all investors, and trading in these instruments is considered risky and may be appropriate only for sophisticated investors. Prior to buying or selling an option, and for the complete risks relating to options, you must receive a copy of "Characteristics and Risks of Standardized Options". You may read the document at <https://www.theocc.com/about/publications/character-risks.jsp> or ask your financial advisor for a copy.

Investing in structured investments involves significant risks. For a detailed discussion of the risks involved in investing in any particular structured investment, you must read the relevant offering materials for that investment. Structured investments are unsecured obligations of a particular issuer with returns linked to the performance of an underlying asset. Depending on the terms of the investment, investors could lose all or a substantial portion of their investment based on the performance of the underlying asset. Investors could also lose their entire investment if the issuer becomes insolvent. UBS Financial Services Inc. does not guarantee in any way the obligations or the financial condition of any issuer or the accuracy of any financial information provided by any issuer. Structured investments are not traditional investments and investing in a structured investment is not equivalent to investing directly in the underlying asset. Structured investments may have limited or no liquidity, and investors should be prepared to hold their investment to maturity. The return of structured investments may be limited by a maximum gain, participation rate or other feature. Structured investments may include call features and, if a structured investment is called early, investors would not earn any further return and may not be able to reinvest in similar investments with similar terms. Structured investments include costs and fees which are generally embedded in the price of the investment. The tax treatment of a structured investment may be complex and may differ from a direct investment in the underlying asset. UBS Financial Services Inc. and its employees do not provide tax advice. Investors should consult their own tax advisor about their own tax situation before investing in any securities.

Important Information About Sustainable Investing Strategies: Sustainable investing strategies aim to consider and incorporate environmental, social and governance (ESG) factors into investment process and portfolio construction. Strategies across geographies and styles approach ESG analysis and incorporate the findings in a variety of ways. Incorporating ESG factors or Sustainable Investing considerations may inhibit the portfolio manager's ability to participate in certain investment opportunities that otherwise would be consistent with its investment objective and other principal investment strategies. The returns on a portfolio consisting primarily of sustainable investments may be lower or higher than portfolios where ESG factors, exclusions, or other sustainability issues are not considered by the portfolio manager, and the investment opportunities available to such portfolios may differ. Companies may not necessarily meet high performance standards on all aspects of ESG or sustainable investing issues; there is also no guarantee that any company will meet expectations in connection with corporate responsibility, sustainability, and/or impact performance.

External Asset Managers / External Financial Consultants: In case this research or publication is provided to an External Asset Manager or an External Financial Consultant, UBS expressly prohibits that it is redistributed by the External Asset Manager or the External Financial Consultant and is made available to their clients and/or third parties.

USA: This document is not intended for distribution into the US and / or to US persons

For country information, please visit ubs.com/cio-country-disclaimer-gr or ask your client advisor for the full disclaimer.

Version C/2020. CIO82652744

© UBS 2021. The key symbol and UBS are among the registered and unregistered trademarks of UBS. All rights reserved.