

# The Case for *Central Bank* Digital Currencies

BY ANDREAS DOMBRET AND OLIVER WÜNSCH

*Why it could soon  
be time to go bold.*

**T**he last dozen years have seen the emergence of digital currencies, starting with Bitcoin in 2009, a highly speculative asset with some currency characteristics that is privately issued and not connected to any central bank or government-issued currency. This was followed by Libra, invented and *de facto* controlled by one of the largest tech companies, which aimed at merging the advantages of being based on existing official currencies with the advantages offered by technology (“stablecoin”). More recently, several central banks are contemplating or already experimenting with issuing a digital currency themselves—a central bank digital currency, or CBDC—that would complement “account-based money” which exists as central bank money (physical cash issued by and reserves with the central banks) and private money (deposits at private credit institutions).

Pervasive digitization has reduced the leverage policymakers have over the choices made by economic agents about which currency they use, particularly in countries with less robust institutions and less stable currencies. While it is difficult to predict exactly what role digital currencies will play, it is quite

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THE INTERNATIONAL  
ECONOMY

THE MAGAZINE OF INTERNATIONAL  
ECONOMIC POLICY

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certain that significant shifts will happen. Policymakers will want to ensure that the official monetary system is the most attractive one.

CBDCs might be a possible avenue for safeguarding the “public good” features of a monetary system brought to the broader economy. Especially in the retail area, these experiments are still in their early stages. More policy and technical work needs to be done, although many central banks have still not determined whether they will roll out CBDCs at all.

Taking a long-term view, here is an outline of what might be achieved in the next few years. We explain why central banks should go bold on CBDCs in the long term, as such an approach is the only one that will allow CBDCs to become viable, in particular as alternatives to physical cash and as co-existing alternatives to deposit money.

### **THE END OF PHYSICAL CASH?**

The concept of money emerged several thousand years ago. From the beginning, money provided three basic functions: a unit of account, a means of transaction, and a store of value. An important reason for something to be called money or currency was that a particular type of money was accepted by convention, custom, or law as a means to account for and settle claims—legal tender.

Different kinds of specie were used: coins made of precious metal, paper money, or exotic items such as shells. They all have in common that they are scarce, either by natural constraints (the availability of precious metals), technology (security features of banknotes), and/or through legal safeguards, such as the monopoly to issue coins and notes protected by criminal law and the enforcement power of a government.

Reliance on the laws of physics comes with an important inconvenience. Cash has to be physically moved and stored. This is logistically expensive and comes with security risks. It is for this reason that in Europe the first

banks emerged in mediaeval times as trans-European trade intensified. Merchants like the Fugger family, needing to pay for goods at a distance, branched out into banking, where moving around physical money is replaced by moving claims on money around with a stroke of a pen, or today through computers.

Deposit money comes with many advantages. From a macroeconomic perspective, it provides the means of money creation to private sector banks that did not issue base money in the first place, by way of leveraging and providing credit. The issuer of base money, today the central bank, can rely on a widespread banking system to contribute to money creation while itself determining the right amount and the conditions for credit. Practicality and convenience count.

For consumers, stocking the right amount of cash at the bank counter or the ATM and paying physically at the baker or the butcher shop is not convenient, which explains economies moving away from cash for daily use as soon as electronic alternatives became available. The financial system benefits because providing credit, deposit, and payment services is lucrative, albeit less so recently. And governments enjoy the universal traceability of non-cash transactions in enforcing tax or anti-money-laundering laws. Due to all of these factors, today the value of physical cash in circulation is marginal compared to the value of deposit money.

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of mathematics that ensure the same, however without the inconvenience that comes with physical goods.

In recent years, digitization has become pervasive, and in such a world, physical cash becomes anachronistic. Still, physical cash for now stays around for several reasons. First, the world has not yet arrived at broadly accepted alternatives. Non-sovereign cryptocurrencies such as Bitcoin and Ether are not universally accepted, exhibit significant volatility in value against official currencies, are technically not fit for large-scale applications, and hence come with significant costs and risks for their users and cannot be regarded as efficient. Stablecoin-like

instruments “backed” by official currencies promise to address the issue of volatility. But they still suffer from the issue of fragmentation, as attempts to establish broadly used stablecoins have failed so far for a number of reasons, including the fact that sovereigns are not willing to hand over a key element of sovereignty to private actors. CBDCs are still in their infancy, with central banks (rightfully) conducting very limited experiments given the potentially significant implications to the monetary system.

However, these issues are not insurmountable from an economic and technological perspective, and developments in the theoretical foundations of cryptography as well as digitization will not be rolled back. Rather, as practical and viable alternatives might emerge in the future, the shift to a new monetary equilibrium could be swift and irreversible. Political and legal roadblocks might slow down or try to prevent such shifts, but this approach could come with costs to the general trust in the monetary system, as we argue below.

#### “STORE OF VALUE”

Prototypes of CBDCs focus on the “means of transaction” function and de-emphasize the function of “store of value.” In the short term, such restrictions are justified. Important policy questions remain to be answered and most CBDC initiatives are regarded as experiments from a technical point of view. It is sensible not to allow or facilitate the aggregation of significant value in something that is not fully developed, especially as the security of digital currencies still needs to be proven.

In the medium term, however, it is questionable whether a CBDC that is significantly limited regarding the “store of value” function is viable. To be fully accepted as an alternative to other currency instruments including cash, a CBDC needs a strong use case. In developed economies with broad financial inclusion and where most individuals and businesses have access to bank accounts, debit/credit cards, and other means of non-cash payments, the added value of CBDCs over industry-provided payment products such as cards or mobile apps is limited. The enforcement of a limit on the amount of CBDC an individual or business can hold would require the central bank as issuer or an appointed third party to monitor the content of CBDC wallets. This would result in an account-like system that does not offer material benefits for end-users over today’s bank accounts and payment systems. Although CBDCs could be introduced to serve as a fallback option only, that would require economic agents using them regularly and to a significant extent. Rather, for a comprehensive business case, economic agents should be able to “store value” in future fully developed CBDCs if they chose to do so.

#### A CASH-LIKE INSTRUMENT

Physical cash today provides for anonymity and limited traceability, and these features allow it to be exploited for illicit activities. It is for that reason that several jurisdictions are pushing back on the use of cash, in particular in countries where tax evasion and organized crime are pervasive. The perception of physical cash becoming outdated and inconvenient and its reduced use for transactional purposes is the most important facilitator of the “war on cash.” In that sense, it might seem inconsistent to call for an instrument that replicates those features of physical cash that are perceived by some as disadvantages. But there are important advantages that remain relevant.

First, the availability of a monetary instrument that does not fully rely on private sector infrastructure is an important public good. Private sector firms such as credit card companies are commercial enterprises that (rightly) decide which counterparties they want to engage with and on what terms (contractual freedom). They abide by mandatory and universally accepted legal constraints (for example, not aiding or abetting criminal activities), but also pursue their own strategic objectives. Clients have few avenues to challenge such decisions, particularly if they are confronted with oligopolistic structures

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that develop when network effects are at play, such as with mobile application platforms (such as Apple’s App Store) or payment providers. The market conduct of companies such as Apple and Google that leverage their mobile phone business to exert influence over any economic activity that is performed through their mobile devices is currently under scrutiny by lawmakers in the United States, the European Union, and elsewhere, and subject to several high-profile court cases. These networks and their effects don’t stop at jurisdictional borders, and the two global economic points of gravity—the United States and China—have substantial leverage over the platforms. Other regions, including Europe, have so far failed to establish competitive alternatives. It is likely that for many economies, creating a secure alternative to physical cash is now more promising than the development of autonomous digital or payment platforms.

Second, not having a monetary instrument that provides for anonymous use creates huge amounts of data that, as experience shows, is not safe against data breaches and will exist forever. Preventing such data from accumulating in the first place might be the only effective solution, especially if legal frameworks of involved jurisdictions do not provide for strong data protection domestically and across borders.

Third and finally, while physical cash requires elaborate and expensive logistics to be available in the entire economy, an actual transaction does not need any technical infrastructure, as bank notes and coins can be used without electricity, internet, or digital devices. While we have made significant progress in improving the resiliency and availability of core elements of our financial market infrastructure (such as real-time payment systems and communication networks), it is challenging to reach similar standards in the broader economy, which for example would need to include internet access for consumers and merchants. Recent high-profile failures of cloud infrastructures demonstrate how these vulnerabilities could cause entire economies to grind to halt. Again, it might be more promising to design a payment instrument that is resilient by design than to develop a global, centralized system that is fully resilient.

The above examples show that even if physical cash might not have a significant role in a future economy, its specific characteristics remain important. However, at least to our current understanding, the features that make cash resilient to the challenges described above are highly correlated with the characteristics that are targeted by the “war on cash.” Smart choices need to be made to find workable compromises, as the abolishment of a monetary instrument as useful as physical cash will likely backfire.

To this end, central banks might be best situated to lead the development of a CBDC as an alternative to physical cash. They are the competent monetary authorities, enjoy the trust of the broader society, can ensure close coordination with policymakers, and ensure any

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such initiative is well-embedded in the broader financial system, including banks and financial market infrastructure institutions. In contrast, one must be skeptical of private sector initiatives such as privately issued stablecoins, except for very limited-use cases. Private companies would be at risk of pursuing strategic interests that might conflict with the public-good character of the monetary system. As much as fragmentation will hamper the acceptance of any initiative, the emergence of a dominant stablecoin player comes with policy, financial stability, and anti-trust issues. Furthermore, a privately issued stablecoin cannot be regarded as central bank money, even if it is backed by it, as it remains a claim on the issuer of the stablecoin, not directly on the central bank.

#### **MANAGING THE RISK OF DISINTERMEDIATION**

The ability of economic agents to hold central bank money in a more convenient way than physical cash might shift the balance between holdings of central bank money and deposit money with commercial banks. Many of the constraints that deter agents from holding larger amounts of cash do not apply to holdings of CBDC, in particular costly logistics and security measures. Commercial banks could be (partially) cut out, leading to “disintermediation,” which by some is seen as a key obstacle to the rollout of the CBDC.

A CBDC that allows for the storage of value comes with challenges in two situations. In the stressed scenario, economic agents might choose to withdraw money from their bank accounts, turning their deposits into CBDCs. While they would still be exposed to the risk related to the currency (foreign exchange risk, or inflation), they could effectively avoid the counterparty risk of fragile banks. There is the concern that the availability of CBDCs could

facilitate such bank runs and thereby create or amplify financial stability risks. As withdrawals materialize, central banks would need to backstop the banks confronted with withdrawals through emergency funding.

But it is not yet clear how the availability of a CBDC would significantly exacerbate an issue that already exists today: larger depositors who have, in several past crises, moved early and quickly, diversifying cash holdings towards banks that are perceived to be safer either within an economy or outside. Their behavior not only stems from the size of the risks they are facing. Rather, large depositors have an information advantage as well as accounts with several banks at home and abroad that facilitate the reallocation of funds. Retail investors, on the other hand, have less incentive to move, because a large share of their funds is credibly covered by a deposit guarantee. Risks only materialize if the capacity of the safety net is not sufficient and the sovereign is not able to (or chooses not to) backstop the safety net, which could be the case in a systemic crisis. The availability of CBDCs might thus have no significant impact on depositor behavior in stressed scenarios compared to the status quo. The availability of a CBDC could even contribute to deposit stability, as depositors would be assured of being able to withdraw funds if they decided to, reducing the incentive to move early.

Even during business-as-usual periods, economic agents might prefer to hold CBDCs rather than deposits at banks that the latter can use to extend loans. Some voices have claimed that this could lead to a credit crunch and/or a massive expansion of central bank balance sheets, which might then face public pressure to grant loans directly to companies and individuals. However, it should be expected that depositors make rational choices. If banks are offering higher interest rates than a CBDC, economic agents should have the choice of depositing money with banks.

It cannot be ruled out that a CBDC would lead to lower deposit amounts, the gap being filled by central bank funding. So while a new equilibrium between CBDCs and bank deposits might materialize, central banks can develop required mitigation strategies. Political pressure on central banks to provide direct lending to corporations and individuals cannot be ruled out, but would in most countries require far-reaching changes to the central bank and monetary legal framework. With development banks as well as with lending rules such as the recently enacted EU taxonomy for sustainable activities, policymakers already have significant leverage over lending decisions.

The new equilibrium will bring more choice to economic agents, as they can allocate their deposits between

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CBDCs (without the burden of handling physical cash) and bank deposits. Even with CBDC holdings at the expense of bank deposits, banks are not cut out. Rather, they can be an important part of the CBDC ecosystem by playing a role in its operation and offering additional services such as payments and asset management. However, as many of the additional services will not include deposit-taking since it is central bank money that is managed or held in custody, the regulatory requirements will be less burdensome than those applying to a deposit taker. Banks might therefore face additional competition from non-banks for certain services. A CBDC ecosystem that is run as a public good could make it easier to foster a level playing field and prevent anti-competitive behavior.

The issues mentioned here deserve close scrutiny and need to be carefully analyzed both in theory and in practice, including through experiments and studies. Structural changes are to be expected. However, it is unclear whether such changes would be so costly as to be the ultimate roadblock for CBDC deployment.

#### **FINANCIAL INTEGRITY, BUT ALSO INNOVATION**

Recently, the European Parliament has taken a fundamental stance on the issue of preventing the use of digital currencies, including CBDCs, for illicit purposes. Legislative proposals such as the Markets in Crypto-assets Regulation and anti-money laundering regulation require all transactions with digital currencies, regardless of whether issued privately or by a state entity including the central bank, and regardless of the transaction amount, to be traceable. Lawmakers held that the speed and low cost of digital currency transactions would facilitate the structuring of larger value transfers into several transactions to such an extent that any materiality threshold would open the possibility of large-scale money-laundering.

Effectively, this means that any transaction, including the purchase of a cup of coffee, will require the identification of the involved counterparties, although the circle of individuals and institutions that would have access to such information would depend on the actual regulation and technical implementation.

On the other hand, the European Central Bank has performed several studies on the end-user acceptance of digital currencies. These surveys show that among many potential aspects, “privacy” is regarded as most important. It seems then that there is some degree of conflict between the objectives of policymakers and the characteristics that would drive the acceptance of digital currencies by the general public. These divergences also seem to be driven by culture, which will make it difficult to align on a set of universal rules in the European Union, let alone globally.

In the end, it will be necessary to allow for a certain “risk appetite.” The calibration will require careful consideration. Too much risk appetite might make a digital currency vulnerable to abuse. Too cautious an approach might hamper the acceptance of a digital currency, as overreaching compliance-related restrictions will negatively impact legitimate use. Trade-offs between resilience, the risk of data breaches, and centralization versus more decentralized approaches need to be well thought out.

#### **FAILURE MIGHT UNDERMINE PUBLIC TRUST**

The establishment of trusted monetary systems can be seen as one of the greatest achievements of economic development and is one of the most important pillars of liberal markets. A key success factors of currencies is that they are “abstract” and “apolitical.” As long as one stays within the limits of the law—usually a broadly accepted consensus on what is legal and what is not—economic agents can rely on the unimpeded use of monetary instruments in their daily activity. In the absence of a viable alternative to physical cash, economic agents are at the mercy of private companies, and policymakers who pursue overly broad objectives might not enjoy broad and sustainable consensus within the society, within or even across jurisdictions.

Safeguarding a certain degree of “abstractness” in the monetary system comes with two important benefits. First, it provides economic agents with an “exit door” to safeguard their funds from the interests of private sector firms and policymakers that are not covered by fundamental legal principles. Second, this exit door tames the ability of firms and policymakers to “go financial” when they should instead address the root of policy failures directly. Closing the exit door further might cause economic agents to suspect that the monetary system is not

“fair” anymore, but open to abuse by powerful private and public stakeholders, thereby undermining the trust in one of the most important pillars of our liberal societies. The existence of this exit door might be more important than its actual use.

**W**ith the advent of digital currencies, we might stand at a juncture in economic history as significant as the invention of paper money and banking. The geopolitical, societal, and monetary environment is facing significant challenges to the stability we have enjoyed for nearly thirty years. The future design and continued broad acceptance of digital curren-

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cies will be an important determinant of our political, social, and economic environment for years to come.

Given the stakes, governments and central banks are right to pursue a cautious approach. A stable monetary system is one of the pillars of stable nations, and changes to this important public good need to be carefully considered.

The system’s ultimate design should be driven primarily by market forces and user requirements to ensure broad acceptance. Regulation and policies should focus on preventing market failures and safeguarding stability, while not stifling the move toward an economic equilibrium between different types of money, or protecting market structures that are not efficient as technology develops. Otherwise, economic agents might be attracted to alternatives to the formally regulated financial system, with policymakers having limited power to prevent such shifts. Countries with less robust institutions and less stable currencies might be perceived as more vulnerable to such developments. However, the recent Covid crisis has demonstrated that even in developed countries, the social fabric and trust in institutions might be more fragile than we would have thought. ◆