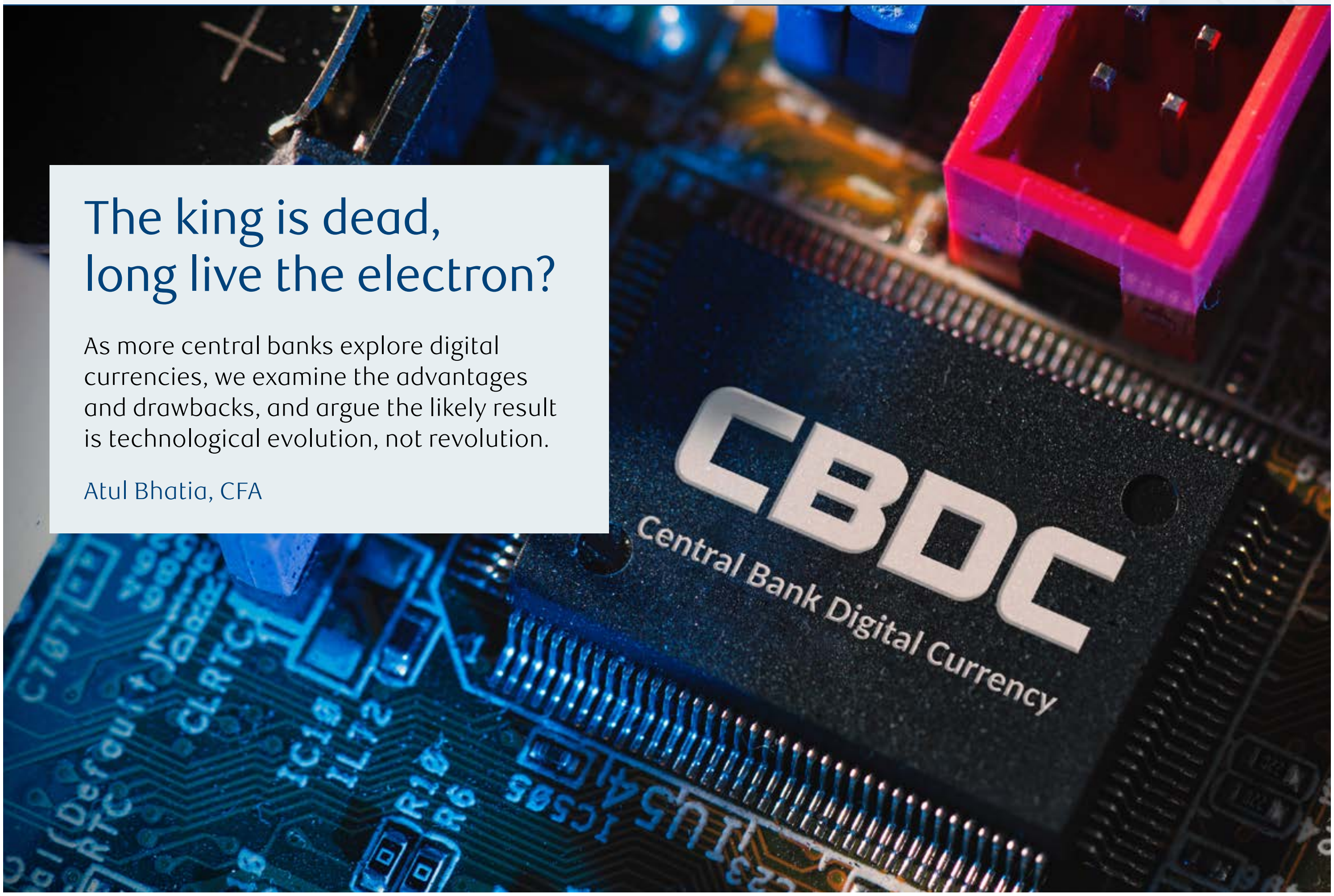
GLOBAL
Insight

Special report

August 29, 2023



The king is dead, long live the electron?

As more central banks explore digital currencies, we examine the advantages and drawbacks, and argue the likely result is technological evolution, not revolution.

Atul Bhatia, CFA

For important disclosures, see page 10.

All values in U.S. dollars and priced as of market close, August 25, 2023, unless otherwise stated.
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Special report

The king is dead, long live the electron?

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As the world becomes ever more digital, is the future of money facing the same destiny? Countries around the world are exploring digital versions of their currencies, even as the concept raises questions of financial system disruption. We examine the advantages and drawbacks of central bank digital currencies, zeroing in on the potential for a digital dollar, and argue the likely result is technological evolution, not revolution.

Key points

- **Electronic payments are on the rise as cash usage declines across the globe, leading an increasing number of governments to think about launching digital versions of their currencies.**
- **Central bank digital currencies, or CBDCs, in theory offer faster and cheaper payments, allow people currently outside the traditional banking system access to financial infrastructure, and could reduce settlement risk and delays on international trade.**
- **Despite the hype around CBDCs, we see a host of security, privacy, and governance concerns that we believe outweigh the theoretical gains on efficiency, and we think it would be quite challenging to line up the necessary political support for an aggressive push toward a digital dollar.**
- **We think the Federal Reserve will continue to emphasize incremental technology improvements versus a risky push to transform the payments infrastructure.**
- **Bottom line: Commercial bank accounts and physical cash are likely to remain at the center of U.S. financial architecture for the foreseeable future.**

Cash may be king, but the crown seems to have lost some of its luster of late. Survey data shows consumers across the world increasingly prefer electronic payment over currency, with more than 70 percent of respondents from countries as varied as Sweden and South Korea wanting to go cashless. At the same time, producing and distributing currency—as well as fighting counterfeit notes—is an expensive and difficult process. The solution, it would seem, is obvious: have central banks distribute currency in electronic format, an idea known as a central bank digital currency or CBDC.

CBDC is a global phenomenon, with dozens of countries studying the idea and a handful already implementing some version of a CBDC. Given the global prominence of U.S. currency, we focus our discussion on the potential for a digital dollar, and conclude with a brief discussion of China's experience as one of the leaders in rolling out digital currency.

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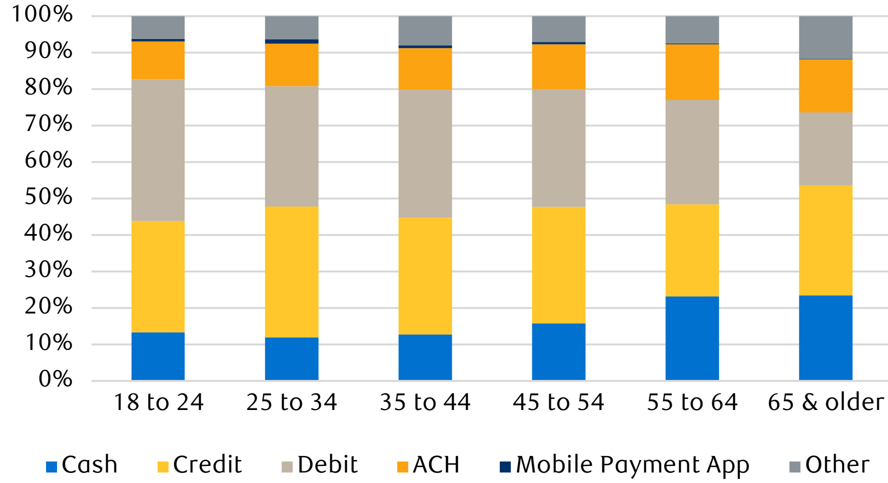
Showing its age? Younger people use cash less often

Percentage of payments made using various methods, by age cohort



Source - Federal Reserve Bank of San Francisco; ACH = Automated Clearing House

Digital currency label breeds confusion

As with many financial innovations, we think rhetoric has outstripped precision, so there are some differences in what people mean when they talk about central bank digital currencies. For us, a true CBDC is a system where individuals hold currency directly at a central bank, in electronic format, with no means of converting their holdings into physical currency.

Although digital, CBDCs are not cryptocurrencies. One hallmark of a cryptocurrency is that the supply of money is not controlled by an institution. Bitcoin, for instance, is created and paid out as a reward to so-called miners, or the users who perform the background computational work to keep the system going. CBDC, on the other hand, remains fiat money, created or destroyed by a central bank as part of its monetary policy decision-making. Some of the CBDCs being evaluated by central banks rely on the digital architecture of cryptocurrencies, such as blockchain verification, but that's a distraction, in our view. At its core, a digital dollar is still a dollar, and the number in circulation is set by the Federal Reserve, not a formula.

In fact, despite the emphasis on the digital format, we believe the core difference between a digital currency system and a physical one is how records of ownership are maintained.

With physical dollars, ownership records are diffuse. The cash that an individual has on deposit with a bank is largely known only to the bank and the depositor. Funds can be transferred completely anonymously, via cash, and even when transferred electronically, records of the movement will be separated: the payer's bank, for instance, will know which account to debit, but it won't know any information about the recipient. The receiving bank will credit its customer yet knows nothing about the payer.

This system is gloriously inefficient, with a single transaction easily requiring four separate institutions to update records and possibly taking days to make the transfer final, but it has also functioned effectively for centuries.

In the case of a digital dollar, efficiency is the watchword. Ownership records are fully electronic and consolidated, making movements between accounts simple and instantaneous. In practice, individuals and businesses would likely have accounts directly at the Fed, and buying groceries, for instance, would simply involve a customer moving CBDC from its Fed account to the grocer's.

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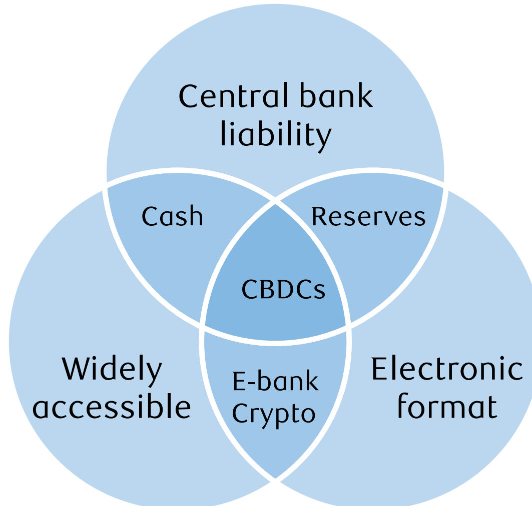
CBDCs' place in the currency landscape



Source - RBC Wealth Management

Since both accounts are held at the same institution, the central bank can instantly and freely transfer the funds, eliminating the delays inherent in our current, dispersed banking system.

This type of digitization is not new. The U.S. essentially went through this process in the 1980s, when Treasury bond ownership went from being physical securities to so-called book-entry format. Conceptually, that move was identical to what's being contemplated here: replacing a physical asset—paper bonds with attached coupons—with a central database recording ownership. Book entry made transfers simple and coupon payments routine, generating massive efficiency in the Treasury bond market. The difference between CBDCs and book entry bonds is one of degree, not kind.

McMoney—fast and cheap

Broadly speaking, we see two main benefits to countries that choose to implement a CBDC.

First, it would reduce costs and increase access to payment services. In the U.S., for instance, roughly five percent of the U.S. population does not have a bank account and most small businesses pay between two percent and five percent of revenues for payment processing, mainly credit card fees. A CBDC would eliminate those costs and bring the entire population into the banking system, creating savings and efficiencies that would be felt positively, even in an economy the size of the United States'. For countries with larger unbanked populations or higher payment fees, the potential gains would be even more important.

Second, it would reduce transaction processing times and so-called float risk, as suppliers wait for payments to clear. This is mainly an issue for larger corporate transactions and international trade, but the ability to create immediate transfers in a closed financial system can mitigate certain types of fraud risk and can greatly reduce lost interest income.

There are other potential benefits that CBDCs can create by reducing counterfeiting, cutting production and distribution costs, and potentially helping policy implementation, but we think those are of secondary importance. The economic case for a CBDC, we believe, begins and ends with the efficiency of reducing financial friction costs across the economy.

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Why a CBDC won't be coming to a Federal Reserve near you anytime soon

Economists in general like efficiency, but the flipside is that efficient systems lack the redundancy that make for stability. We think having a single point of failure for dollar payments in a world that uses the greenback for all manner of trade is, in a nutshell, a terrible idea. In one move, we think the U.S. would create an unparalleled target for hackers and thieves, not to mention terrorists or geopolitical rivals. Even a cursory look at the history of electronic security shows the risks of centralizing data and wealth.

Putting aside potential bad actors, what about a software update that goes wrong? The U.S. has seen nationwide flight departures canceled because a contractor accidentally deleted the wrong files in a critical Federal Aviation Administration system. That was bad, but a world where dollarized economic activity cannot take place for hours or days or even minutes would be catastrophic.

The Fed already operates mission-critical payments systems, but these generally offer connections only to depository institutions or regional Federal Reserve banks. Trying to secure a system offering hundreds of millions of access points to trillions of dollars on a 24/7 basis is a Herculean task, and we believe current technology and practices are insufficient to truly protect a CBDC environment.

Outside of security, there are also privacy concerns with centralizing sensitive financial information and making it available to the government. In the U.S., federal officials already have broad access to individual financial data via subpoena powers, but combining all financial information in one spot is a step-change higher in potential informational abuses.

There are also concerns the government would be able to interfere with certain transactions. Take, for instance, the U.S. states where marijuana is now legal. Many of these businesses already struggle to find banking services, but that fight is nothing compared to the potential impact of being shut out by the Fed in a world where a CBDC is the only alternative. A single decision to cut off marijuana spending would reduce those businesses—deemed legal by the states where they operate—to bankruptcy or the barter system.

Even with privacy guardrails, we believe the potential powers a CBDC would give to the Fed—which is already a massively powerful institution—would almost inevitably lead to politicization of the central bank. We shudder to think of the U.S. Senate confirmation hearings for a Fed chair nominee in a world where that person could exert practical control over the payments system, and we believe those political considerations would quickly override the monetary policy credentials for future nominees.

No, really, not anytime soon

On balance, our view is that it's difficult to make a strong theoretical case for moving to a CBDC infrastructure. The efficiency benefits are real and meaningful, but they simply cannot justify creating a single point of failure in critical payments infrastructure.

In practical terms, we see an even steeper climb for the digital dollar. Historically, the U.S. has never been an early adopter of financial innovation. It was one of the last countries to implement chip credit cards, and the U.S. remains the largest user of paper checks in the world. Over five percent of cashless payments in the U.S. still take place by signing little chits of paper; it's difficult to reconcile that with the imminent arrival of digital currency wallets.

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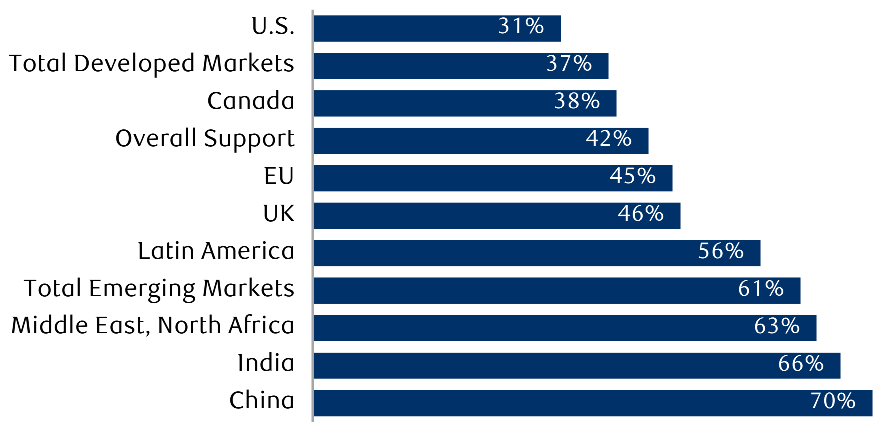
We also see significant pushback from existing players in the financial infrastructure. Last year, the two largest U.S. credit card networks reported over $50 billion in revenues—which would be under immediate and severe threat if a CBDC offered a free alternative.

The broader banking system would not be immune from the impact of a CBDC. At a minimum, we see a digital dollar raising funding costs for banks, as zero-interest depositors would have no need to stay in the cumbersome commercial banking system when the Fed offered an instant and free alternative. If the Fed were to offer interest on deposits—broadening the digital currency from a simple cash substitute to a digital money supply—then the risk to banks increases exponentially. At that point, the Fed would be a true competitor to deposit-taking and loan-making institutions in their core businesses.

In congressional testimony on CBDCs in 2022, CEOs of large banks were ambivalent-to-negative, mainly couching criticism on practical grounds. Given the stakes to the well-heeled and politically astute financial players, we would expect much more significant pushback if a digital dollar ever moved closer to reality.

Geography heavily influences financial professionals' support for a CBDC

Percentage of respondents in favor of launching a CBDC



Source - RBC Wealth Management modification of a chart published in 7/26/23 Reuters article, “Limited support for central bank digital currencies in global investment industry survey.” Data from CFA Institute; respondents were CFA charterholders.

The bottom line is that between privacy, security, and lobbying, we see a CBDC as a tough sell to the U.S. Congress.

Incremental, not transformative, technology

Rather than fully transition to a CBDC, we expect the Fed and most other central banks to take a more measured approach, closely integrating technology to achieve efficiency but operating in parallel with existing payment structures.

Take, for instance, FedNow, a new real-time payments system created by the Federal Reserve. Like a CBDC, the system allows immediate, electronic settlement, but, critically, it operates between depository institutions. The limited scope reduces security concerns, while competitive forces should eventually bring FedNow’s time and cost savings to individual customers. This private-public hybrid approach, in our view, is both better and more likely to occur.

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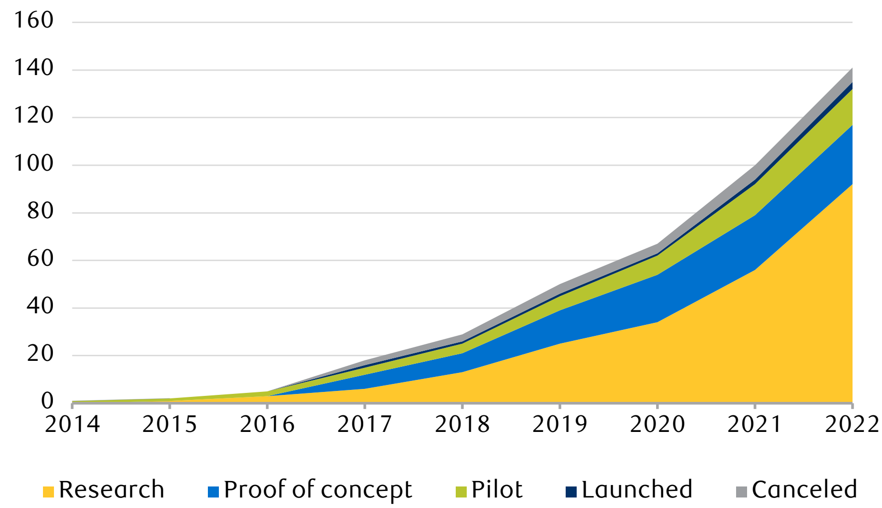
The case for a CBDC is also weakened by the rise of large, global commercial banks. Many of the benefits of centralizing payments are already occurring, as trade between multinational companies is often settled at one of the dozens of truly global banks. These banking services are not free, but they have the potential to deliver many of the efficiencies provided by a CBDC without the baggage of centralized control.

We think the Fed is likely to continue studying a digital dollar and running pilot programs. It would be unwise not to since the dollar's preeminent role in trade may someday require a digital currency. We believe the Fed may even launch something it calls a digital dollar, even if in practice it's just a check-the-box exercise to show the U.S. also has the latest shiny new toy.

Central banks move forward, slowly, with CBDCs

Number of CBDC projects by stage of development



Source - CBDCTracker.org, International Monetary Fund, RBC Wealth Management

Realistically, however, we see physical currency and individual deposit accounts at commercial banks at the center of the U.S. system for the foreseeable future.

China in the lead

Unlike the U.S., China has been a leader in the digital currency field, rolling out the digital yuan, also known as e-CNY, and actively encouraging its use. The Chinese have implemented several interesting twists on the CBDC concept. First, the e-CNY pays no interest, making it much more of a pure cash substitute than other CBDCs under discussion that allow for interest payments. In addition, the use of e-CNY is voluntary and intermediated through large banks. These differences seek to reduce the impact of the digital yuan on the traditional banking system, but they also can reduce many of the potential efficiencies.

Uptake for e-CNY has been limited, with officials reporting less than 0.2 percent of cash has shifted into the digital format. One of the main problems for e-CNY, in our view, is the prevalence, quality, and integration of the existing digital payment platforms. Private sector mobile payments in China go back nearly 20 years, and the two major players control 90 percent of the country's digital payments market. The e-CNY has been growing, but the private-sector alternatives are already low-cost and embedded in the user's digital life. One advantage of e-CNY is its ability to function when a user is offline, a key

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differentiator in remote areas or during natural disasters, but one that has yet to translate into broad usage of the digital yuan.

In essence, China has so far been taking an incremental approach, similar to what we see the Fed doing. The difference is that the Chinese are relying on the structure of the e-CNY to limit its potential as a surrogate for the broader banking system, while we see the Fed eschewing the concept of a digital dollar, at least for the near future.

China continues to push forward on the use of CBDCs for international trade. The most recent step has been the launch of mBridge, a fully digital trade settlement platform involving China, Thailand, the United Arab Emirates, and Hong Kong. The infrastructure is important, but we see limited uptake until the more widely held currencies such as the euro or the U.S. dollar are in the system. The benefits of CBDC settlement are not going to be sufficient, in our view, to shift investor and corporate preferences around currency exposure.

Small steps on a long road

Central bank digital currencies, in some form, are likely to be adopted by an increasing number of countries. Nations with a high percentage of electronic payments, or a relatively concentrated and small banking system, may find it easier to introduce some form of a CBDC. In time, these countries or others may realize the efficiency potential of central bank digital currency in a secure format. For now, however, we believe CBDCs should be viewed as an adjunct to existing payment and banking systems. We see evolution, not revolution.

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