What is central bank digital currency (CBDC)?

CBDCs are digital currencies issued by central banks. Their value is linked to the issuing country's official currency.
When was the last time you paid for something with cold, hard cash? While physical currency is still widely used all around the world, people in some countries have been using it a lot less lately—especially during the COVID-19 pandemic, with its cash shortages and hygiene concerns. As people shift away from cash, many are increasingly turning to digital financial transactions. Globally, banks and financial institutions process far more transactions digitally than they do in physical branches.

A variety of recent digital disruptions, including the emergence of cryptocurrencies and blockchain technology, have made waves in the financial-services sector. Digital currencies are part of that story, and central banks have started to take note.

Central bank digital currencies (CBDCs) are the digital form of a government-issued currency that isn’t pegged to a physical commodity. They are issued by central banks, whose role is to support financial services for a nation’s government and its commercial-banking system, set monetary policy, and issue currency. Examples of central banks include the US Federal Reserve System, the Bank of Japan, the People’s Bank of China (PBOC), and Germany’s Deutsche Bundesbank.

CBDCs are similar to—but not the same as—stablecoins. Stablecoins are a specific type of private, stabilized cryptocurrency pegged to another currency, commodity, or financial instrument with the goal of maintaining a relatively stable value over time. Unlike cryptocurrencies, which are decentralized, CBDCs are state issued and operated.

What are the different types of CBDCs, and where are they currently in use?

There’s no one type of CBDC; a wide variety of approaches are being piloted in various countries. One type of CBDC is an account-based model, such as DCash, which is being implemented in the Eastern Caribbean. With DCash, consumers hold deposit accounts directly with the central bank. At the opposite end of the spectrum is China’s e-CNY, a CBDC pilot that relies on private-sector banks to distribute and maintain digital-currency accounts for their customers. China showcased e-CNY during the 2022 Olympic Games in Beijing. Visitors and athletes could use the currency to make purchases within the Olympic Village.

Another model is the one under consideration by the European Central Bank in which licensed financial institutions each operate a permissioned node of the blockchain network as a conduit for the distribution of a digital euro. A final model, popular with “cryptophiles” but not yet fully trialed by central banks, is where fiat currency (currency that is government issued but not backed by a commodity) would be issued as anonymous fungible tokens to protect users’ privacy.

At present, 87 countries—representing more than 90 percent of global GDP—are exploring CBDCs. Here’s a closer look:

— Jamaica’s JAM-DEX launched in June 2022 and is the first CBDC to be ratified formally as legal tender. It’s a relatively simple offering, with no advanced use cases (such as cross-border payment for smart contracts). JAM-DEX isn’t blockchain based, unlike the Bahamas’ Sand Dollar and the Eastern Caribbean Central Bank’s DCash.

— Nigeria, the first African country to roll out a CBDC, launched eNaira in October 2021.

— Sub-Saharan Africa is poised to adopt CBDCs. The widespread use of M-PESA, a mobile money transfer service, has established a strong social and financial infrastructure for the potential future use of CBDCs.

— Project Aber is an initiative launched jointly by the central banks of Saudi Arabia and the United Arab Emirates that tested the use of a jointly issued digital currency as an instrument for domestic and cross-border settlements between the two countries.
Why have central banks become interested in CBDCs?

Four trends have likely spurred central banks’ interest in CBDCs:

— **Plummeting cash usage.** In Europe, cash usage declined by one-third between 2014 and 2021. In Norway, only 3 percent of payment transactions are made with cash. This trend has forced central banks to reexamine their role in the monetary system.

— **Growing interest in privately issued digital assets.** In the United Kingdom, 10 percent of adults report holding or having held a digital asset, like cryptocurrency. The European Central Bank says that as many as 10 percent of households in six large EU countries own digital assets. Consumer use of digital assets can be viewed as a potential challenge to fiat currency as a unit of measurement for value.

— **Decreasing sense of central banks as payments innovators.** CBDCs offer central banks a new opportunity to lead strategic conversations on cash use cases in a public forum.

— **Rising global payment systems.** Many central banks seek to establish greater local governance over increasingly global payment systems. Central banks see CBDC as a potential stabilizing anchor of local digital payment systems.

There are potential benefits to establishing CBDCs, but they aren’t without risk. Read on to learn more.

What are the potential benefits of CBDCs?

Advocates of digital finance believe that new digital tools, among them CBDCs, can address many issues related to efficiency, security, and access:

— **Reduced costs.** Financial-service providers stand to save $400 billion annually in direct costs by shifting spending away from physical infrastructure and toward digital finance. But reduced costs must be measured against the significant investments in new technology that CBDCs will require.

— **Increased speed.** CBDCs could improve the speed and efficiency of many countries’ electronic payment systems. (This argument is becoming less compelling, as we’ll see below.)

— **Greater access for those without bank accounts.** Just under 5 percent of US adults don’t have bank accounts; in 2016, there were 1.6 billion unbanked people around the world. CBDCs accessible through mobile devices could potentially increase financial inclusion. And for providers of digital financial services, mobile money presents a gateway into untouched markets. However, adoption isn’t a guarantee; many underbanked people may favor the total anonymity afforded by cash.

— **Heightened security.** Deploying a regulated digital currency accessible via mobile devices could potentially enhance payment security by ensuring that a transaction is finalized and unalterable—even without a formal bank account—reducing the chances of fraud. Regulated use of private-key cryptography could enable users to “sign” transactions digitally, reducing the wait time for a transaction to be irreversibly final and giving the parties greater peace of mind.

What are some concerns around CBDCs?

While central banks are enthusiastically exploring the potential of CBDC, there are some challenges to be considered as well. When money becomes digital, it also becomes traceable and therefore taxable. McKinsey analysts anticipate this to become a hurdle to voluntary adoption. Another issue is a lack, so far, of technological stability. In January 2022, the digital version of Eastern Caribbean DCash went offline for two months because of technological issues.
There are also concerns that the business case for CBDCs is weak. For one thing, it may take more effort for central banks to develop infrastructure for digital currencies than can be justified by the relatively meager reward. Also, CBDCs may not confer the increased speed as predicted: many developed countries now activate instant payments using legacy (nonblockchain) infrastructure. Central banks in some nations, such as Canada and Singapore, have come to the conclusion that there isn’t currently a strong case for digital currency.

How does China use CBDC?
Private cryptocurrency is banned in China, but the country has still been dabbling in digital currency. In fact, China’s central bank, PBOC, has created the most advanced market application of CBDC to date. China’s CBDC pilot of e-CNY relies on private-sector banks to distribute and maintain these accounts for their customers.

In late 2019, PBOC began testing e-CNY through app- and wallet-based payments for government services, shopping, transportation, and other consumer lifestyle use cases. The pilot initially launched in four cities, then quickly expanded to five more. As of May 2022, 4.5 million merchant wallets and 260 million transactions worth more than 83 billion renminbi had been performed through the e-CNY pilot.

An early look at lessons from China’s use of CBDC found the following potential benefits:

— **Encourages financial inclusion.** Having a bank account isn’t a prerequisite to use e-CNY. Consumers without an account can download and deploy digital wallets from six authorized, state-owned banks.

— **Supports know-your-customer (KYC) protocols.** CBDC, like blockchain-based cryptocurrencies, enables customers to use unique digital fingerprints to identify themselves to banks. This helps banks avoid working with unverified actors, which can deter their implication in fraud and other criminal activities, including money laundering.

— **Reduces compliance costs for banks.** The use of CBDC could result in savings for banks related to transaction monitoring and reporting.

— **Simplifies government programs.** It might be possible for e-CNY to streamline the distribution of subsidies, such as transportation for employees.

How can various stakeholders prepare for the future of CBDCs?
It’s still too early to predict what the future holds for CBDCs. But despite the uncertainty, central banks can consider the following five questions:

— **What’s the end game in adoption compared with traditional money?** Business cases and scenarios should be based on assessments of the current and future payment landscape and realistic adoption goals.

— **Which constituencies does the CBDC aim to address?** Design choices should be based on the user segment: private citizens, commercial banks, or corporations. Decisions should be informed by expertise outside the traditional central-bank organizations.

— **What role will the central bank play?** Whether or not the central bank envisions itself as deeply involved, existing relationships with commercial banks and corporations should be used to achieve adoption goals.

— **What resources and capabilities will be required?** Central banks are likely to need new decision-making processes, new change management practices, and talent experienced in forging partnerships.

— **What changes beyond payments will central banks need to enforce?** Hurdles in regulation, commerce enablement, and fiscal rights will
need to be overcome to achieve central banks’ adoption goals.

But as we’ve seen, central banks aren’t the only organizations invested in the game. Here’s how other stakeholders can prepare for the arrival of CBDCs:

— Providers of financial-service infrastructure should optimize their design choices for interoperability with digital currencies.

— Retail banks, merchants, and payment service providers should consider the level of infrastructure investment that might be needed to implement CBDCs successfully as they address other requirements for modernizing payments.

— Chief risk officers and CFOs should monitor the impact of digital currencies on bank liquidity and capital requirements in light of potential policy changes.

— Investors in popular and speculative cryptocurrencies should anticipate how CBDCs will affect their assets. The emergence of central-bank solutions could hinder the growth of crypto ecosystems.

— Commercial banks should learn to conduct effective KYC and anti-money-laundering monitoring of digital currencies. In models that involve commercial banks issuing CBDCs to customers (in return for deposit-based revenue opportunities), they will also be expected to carry the cost burden for KYC compliance.

While much is still unknown about the future of CBDCs, a fuller picture of their benefits and disadvantages will emerge with time. One thing is clear: CBDCs have the potential to significantly affect the world.

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