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CENTRAL BANKS PURSUE DIGITAL CURRENCIES

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IN THIS PAPER: Major central banks are exploring digital currencies, which seem likely to become a mainstay of tomorrow's economy. As policymakers wrestle with the many moving parts of digital dollars, euros and yuan, their decisions will shape the next dimension in national currency—and could reshuffle international currency leadership.

MANY ASPECTS OF THE GLOBAL FINANCIAL SYSTEM ARE ALREADY HEAVILY DIGITIZED, AND THE POPULARITY OF DIGITAL CURRENCIES IS SOARING. IT WAS ONLY A MATTER OF TIME, THEN, BEFORE CENTRAL BANKS GOT INTO THE GAME. WHILE THE ADOPTION OF CENTRAL BANK DIGITAL CURRENCY (CBDC) ISN'T WIDESPREAD YET, MANY CENTRAL BANKS ARE TAKING A CLOSE LOOK—AND SOME ARE MUCH FARTHER DOWN THE ROAD TO ADOPTION THAN OTHERS.

But if the footprints of cryptocurrencies are dwarfed by the massive size of traditional national currencies, are digital national currencies worth the effort?

Central bankers believe that they are. They realize that digital currency demand will continue to grow, especially with younger consumers embracing the move to a largely cashless society. By developing a CBDC, a central bank would be ready to meet tomorrow's society on its own terms—and keep a firmer grip on an increasingly digitized economy.

CBDCs offer a lot of promise. Implemented effectively, they could streamline electronic payments, make cross-border payments faster and more secure, and help underbanked communities access the financial system. CBDCs would facilitate digital commerce within the existing system, giving central banks an alternative to watching a growing share of economic activity move off its radar screen.

Fiscal and monetary policy effectiveness and efficiency would get a boost too, ironing out some of the wrinkles revealed during the COVID-19 pandemic. In the early days of stimulus payments, some citizens received direct deposits almost immediately; others, without access to accounts at commercial banks, suffered from delays caused by misaddressed payments or from limited access to their funds in a world that made face-to-face transactions largely impossible.

In a CBDC world, rather than working through banks and other financial institutions, central banks could deliver relief payments directly to citizens immediately and in more accessible forms—even in underbanked communities. Think of it as a mobile app connected directly to government stimulus: during economic crises, funds could be seamlessly transferred to individuals with the push of a button.

These benefits are enticing, but there's a lot for central banks to work out when contemplating the launch of digital currency.

The balance between security and privacy jumps to top of mind. The anonymity of many digital currencies is a big draw but can also facilitate illicit behavior—and clouds a central bank's ability to monitor how well the system is working. The potential for disintermediating the banking industry must be addressed, and policymakers must balance facilitating economic activity with the desire to exert more control over citizens and the economy.

The author wishes to thank Sam Petruzzi for his contributions to this research.

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WHAT MIGHT A CENTRAL BANK DIGITAL CURRENCY LOOK LIKE?

Assuming that a central bank decides to launch a CBDC, how would that happen in practice? To answer that question, it helps to first define what a CBDC would—and wouldn't—be. Most important, it would be a digital currency but not the same thing as the cryptocurrencies that dominate headlines today.

A CBDC, in most cases, would be designed to complement existing financial systems, while cryptocurrencies are designed to exist wholly outside that system or as an alternative to it. Broadly speaking, we can group existing cryptocurrencies into three broad categories:

1. Payment Tokens: Like traditional currency, payment tokens—Bitcoin being the most prominent example—are a way to exchange and store value. A decentralized ledger is used to record ownership and transactions as well as to create tokens through cryptographic methods, maintaining decentralization and security.
2. Platform Tokens: These currencies serve as a payment means on platforms for the development of an array of financial services. Typically decentralized, these platforms include lending and asset exchanges as well as other apps, often through self-executing algorithms (smart contracts).
3. Stablecoins: Like traditional currencies, stablecoins are a means of value exchange and storage, but they're pegged directly to the value of another asset, often the US dollar. Widely used in the cryptocurrency space, stablecoins possess many of the speed, security and technological advantages of traditional cryptocurrency without the downside of high volatility.

We expect most CBDCs to ultimately resemble a hybrid of platform tokens, which facilitate efficient transactions, and stablecoins, which preserve an asset's stability. Unlike many cryptocurrencies, CBDCs wouldn't be "mined," an algorithmic creation process requiring enormous—and controversial—amounts of computing power. A CBDC would be a liability on central bank balance sheets, likely created entirely under the control of central bank and/or Treasury officials.

CBDCs are not intended to be distinct from traditional currencies, so they could be spent through digital payment platforms such as Venmo or with a credit card. From a market perspective, CBDCs wouldn't have crypto-like risk profiles (*Display 1, page 3*) or be subject to the same intense speculation. Indeed, CBDCs really shouldn't be thought of as investable assets at all—they likely won't be traded independently of existing currencies. Rather, they would exist to facilitate digital financial systems, and a link to the central bank balance sheet would emphasize that role.

TO DECENTRALIZE OR NOT DECENTRALIZE?

If CBDCs are to be considered as largely interchangeable with traditional national currencies, central banks will need to get much more comfortable that they can tackle a key issue faced by cryptocurrencies: security.

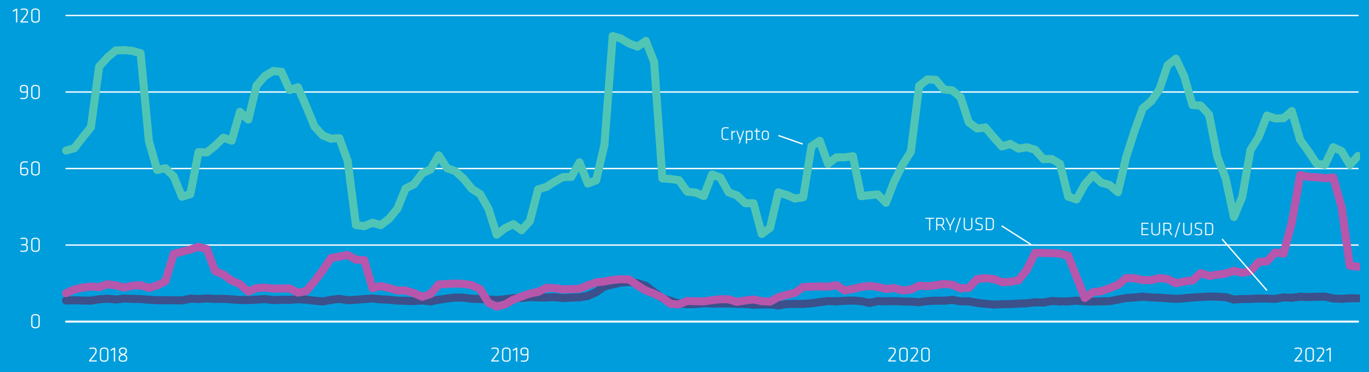
Decentralization enables cryptocurrencies to address this question, by storing transaction logs and network control in multiple independent nodes. With a CBDC, payment processors and financial institutions could verify and maintain the network, hold accounts and distribute the currency. After all, it's a lot easier for a few institutions to handle transactions in tens of millions of accounts than for one institution to juggle hundreds of millions of accounts. Also, the network shouldn't be entirely destabilized by a cybersecurity incident at one institution.

However, it's very unlikely, in our view, that a CBDC would be entirely decentralized.

A CBDC is meant to complement existing currency systems, so it would remain a liability on central bank balance sheets, just like newly printed bills. For example, the US Federal Reserve could decentralize transaction logs by having each regional Fed bank be a node in the system, but the dollar itself would still be a liability on the Fed's balance sheet. This probably rules out cryptocurrency-like decentralization.

DISPLAY 1: CBDC VOLATILITY WILL LIKELY PALE RELATIVE TO CRYPTOCURRENCIES

30-Day Rolling Volatility of Select Currencies



Past performance does not guarantee future results.

Crypto is represented by the Bloomberg Galaxy Crypto Index of cryptocurrencies. EUR represents the euro, and TRY represents the Turkish lira, both relative to the US dollar.
Through July 23, 2021
Source: Bloomberg

> The complete anonymity of existing cryptocurrency transactions—which facilitates security and, in some cases, illicit activity—would almost certainly not apply to a CBDC.

THE PRIVACY ELEMENT: CBDCs LIKELY TO BE MORE OPEN

The complete anonymity of existing cryptocurrency transactions—which facilitates security and, in some cases, illicit activity—would almost certainly not apply to a CBDC. It would be hard, after all, for a central bank to use a CBDC to implement policy if the recipients of funds were anonymous. Ensuring the traceability of CBDC transactions is, in fact, a key focus of many ongoing central bank projects.

This emphasis on traceability exists partly because payments processed through official channels, as CBDC payments would be, must be tracked in order to identify and remedy potential mistakes and to safeguard against facilitating illegal activities—a notable downside of existing cryptocurrencies.

To ward off this risk, we expect that CBDCs will be subject to "know your customer" and anti-money-laundering rules, just like current payment systems. Traceability will enhance enforcement of these laws for CBDC transactions. Tracking CBDC transactions could also provide economic insights that might lead to better-informed policy decisions.

CBDC PROGRESS REPORT: WHO'S LEADING, WHO'S LAGGING?

It's clear that the world's central banks are at different points on the path to a CBDC (*Display 2, page 5*). Many are researching, and in some cases piloting, CBDCs. The potential benefits and the need to stay competitive in the digital age has prompted even skeptical policymakers to consider development. While few have reached the pilot phase, we expect research to accelerate.

It's not possible to delve deeply into each effort in this format. Instead, we'll focus on China and the US, for two reasons: First, China's yuan seems like the currency most likely to challenge the primacy of the dollar on the international stage, and the Chinese are much further along the path toward digitization, making it a good case study of the promise and pitfalls of CBDCs. Second, the dollar, despite the looming challenge from the yuan, remains the de facto global reserve currency—and the Fed the bellwether for global central banks.

> In many emerging markets with highly volatile currencies, cryptocurrencies have already flourished, given that they're removed from sources of instability and offer a developed financial infrastructure.

CHINA: LEADING THE CHARGE TOWARD CBDC ADOPTION

China is no stranger to the digital economy: many residents in China's largest cities cite digital payment platforms WeChat Pay and Alipay as their primary payment methods. Building on that domestic familiarity with digital payments, a pilot project for China's digital currency, officially called Digital Currency Electronic Payment (DCEP), already encompasses millions of Chinese citizens. DCEP is being used for everything from paying salaries to buying household goods.

For the Chinese government, a CBDC would facilitate transactions outside the purview of private technology companies and subject them to greater government oversight. The DCEP—highly centralized and programmable—may also represent an opportunity for China to exert greater currency control. It's feasible, for instance, that the People's Bank of China (PBOC) could block payments to companies, individuals or nations. Some citizens have been involved in tests using DCEP that expire in months, a potential avenue for "forcing" consumption and demand in weak economic times.

China sees an advantage in cross-currency potential as well, reinforced by tests involving the mainland city of Shenzhen and the increasingly influential city of Hong Kong. Along those lines, the increasing demand for digital financial infrastructure in emerging economies may offer additional opportunities for China to continue internationalizing its currency as it seeks a larger role in the world financial system.

In many emerging markets with highly volatile currencies, cryptocurrencies have already flourished, given that they're removed from sources of instability and offer a developed financial infrastructure. El Salvador, for example, has already passed a law accepting Bitcoin as legal tender. If emerging markets adopt China's DCEP instead of existing cryptocurrencies as part of their financial system, it will boost China's long-term goal of increasing the internationalization of the yuan.

Not all emerging nations will rely on China, of course—many expect to create their own CBDCs. But these smaller countries are still likely to leverage the existing architecture from the Fed, PBOC or another large central bank as they implement their own CBDCs. It remains to be seen how closely tied these offshoot CBDCs might be to the original CBDC they're based on, but the potential for digital economies and financial systems to be closely intertwined is an issue that central banks will have to consider when implementing digital currencies.

DISPLAY 2: WHERE CENTRAL BANKS STAND ON THE DIGITAL CURRENCY PATH

CENTRAL BANK	STATUS	DESCRIPTION
Federal Reserve	Research	Focus on better delivering aid to citizens in times of crisis, enhancing digital financial infrastructure and combating private money (such as stablecoins)
People's Bank of China	Pilot	Includes programmable money, with potential for currency control and accelerated international adoption
European Central Bank	Research	Goal of enhancing Europe's efficiency and competitiveness in modern economy
Bank of England	Research	Early proponent still researching CBDC to advance financial inclusion and competitiveness in modern economic landscape
Bank of Japan	Proof of Concept	Not currently seeking to issue CBDC, but recognizes importance of maintaining Japan's economic competitiveness in digital age
Bank of Korea	Pilot	Early stages of testing basic role and function with subsidiary of Korean tech company Kakao. Also plans to test privacy and more advanced functionality
Bank of Russia	Research	Emphasis on efficiency and lower costs for households and businesses in modern economy
Reserve Bank of Australia	Research/Proof of Concept	Researching programmable features and has already conducted proof-of-concept digital payment settlement system with Australian banks
Bank of Canada	Research/Pilot	No plans to implement unless use of traditional money declines, but recognizes the potential of digital currencies

As of July 31, 2021
Source: AllianceBernstein (AB)

> The Fed views CBDCs as a way to enhance economic inclusivity and efficiency by providing better access to the financial system for the underbanked.

US CBDC: STILL IN THE RESEARCH PHASE

The Fed hasn't traveled as far down the CBDC path as Chinese policymakers. The Fed is clearly thinking about the topic, though, and plans to publish a discussion paper this year describing its current perspective. Even at this early stage, the Fed clearly views the future digital dollar in a different role than the Chinese do. The Fed has no particular desire to increase the internationalization of the dollar, which is already the de facto global reserve currency.

Instead, the Fed views CBDCs as a way to enhance economic inclusivity and efficiency by providing better access to the financial system for the underbanked. As noted above, many households had no immediate access to crisis support payments because they're not linked to the current system; using a digital dollar to reach those households would enable a more rapid and seamless transmission of economic policy. One option being considered is creating digital accounts for all households, which could be funded instantaneously in times of crisis.

The cryptocurrency arena has a precedent for these types of accounts: digital wallets—essentially addresses in digital architecture that can send and receive currency. Users of Fed CBDC wallets could enjoy cryptographic security and a simple bank-account equivalent while receiving timely payments from the government. This type of account would likely be used only in times of crisis, so we don't expect it to replace traditional bank accounts or to disintermediate commercial banks. The Fed isn't likely to try to eliminate private banks, but it could use a CBDC to boost the economy when necessary.

THE BIG PICTURE ON CBDC

Policymakers at many of the world's central banks are wrestling with the many moving parts of implementing digital currencies, including security, anonymity, implications for policy implementation and its role alongside traditional national currencies.

As central bankers move along this path, the field is clearly separating, revealing leaders and laggards. China is moving full speed ahead, the US is still in research mode, and other nations are elsewhere along the continuum, still working through the pros and cons of what has been, to this point, something of a frontier asset class.

It seems inevitable to us, though, that CBDCs will become a vital part of the global monetary and financial system. They could also become a facilitator—or a wedge, depending on your perspective—that alters the international currency landscape, vaulting some currencies ahead of others on the world stage. That makes the stakes of CBDCs very high for central bankers.

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